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PREVALENCE OF POLIOMYELITIS

During the week ended September 30, 468 cases of poliomyelitis were reported in the United States, as compared with 484 cases during the preceding week, and a median of 277 cases for the corresponding week of the 5 years 1934–38. Decreases occurred in a number of the States which have been reporting the largest numbers of cases, while small increases occurred in several States which have been reporting very few cases. The States reporting 10 or more cases are given in the following table:

	Cases		Cases
New York	109	Minnesota	34
New York City	13	Minneapolis	15
New Jersey	17	Iowa	16
Pennsylvania	36	Texas	16
Philadelphia	19	Colorado	13
Illinois	13	New Mexico	10
Michigan	58	Utah	13
Detroit	33	California	57
		Los Angeles	14

STABILIZED METHOD OF FORECASTING POPULATION [1]

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Broadly viewed, there are two types of population estimates, from the standpoint of time. There are those estimates which deal with reconstructing the past, and there are those that are directed toward forecasting the future. The two types of estimates are quite distinct, and their underlying principles are considerably different. The first type aims at more or less accurate numerical evaluations of the actual populations, while the other basically strives to obtain the best estimates that could be expected *if* certain concatenations of factors that have been operating within the population in the past should continue to do so in the future.

[1] From the Division of Public Health Methods, National Institute of Health. Acknowledgment is made to Dr. Harold F. Dorn, Dr. Frank Lorimer, Mr. Leland C. DeVinney, Mr. M. Provus, and Miss Lolagene Convis for their valuable suggestions and criticism.

I

Estimates of the first type may be classified as precensal, intercensal, and postcensal. Precensal estimates, that is, estimates for years previous to any date for which reliable census data are available, are frequently made by backward extrapolations.[2] This is accomplished by applying a certain mathematical function to the given data and extending the function into the past. The problem of intercensal estimates has been quite satisfactorily solved on the basis of either arithmetic or geometric interpolations. The postcensal estimates are of two kinds, depending on the data at hand.

Where no records of births and deaths are available for the given period, or where such records do exist but there is no possibility of obtaining estimates on net migration, postcensal estimates are customarily made by forward extrapolations of the latest intercensal increases, again on the basis of either an arithmetic or a geometric progression. Long-time functions, as the logistic curve or any other function that is based on a longer period than two censuses, which might be profitably utilized for short-range predictions of larger populations, would hardly work in making estimates for small units of populations, such as cities, counties, and even States.

In cases where birth and death data are available, and where, in addition, there is also some possibility of obtaining fair estimates on net migration, the proper procedure, of course, is to add to the latest census the population increase based on these factors. Natural and simple in its application, this well-known method, recently called "migration and natural increase method" (*15*), presents a troublesome problem when applied to State or city data, owing to the fact that internal migration is one of the factors most difficult to determine. School statistics, frequently supplemented by data from other existing population sources, recently have been widely exploited for making such estimates of migration, but this is substantially a loosely defined procedure.[3]

II

In dealing with estimates of the second type, namely, forecasts of future populations, there are two possibilities from which to choose. One may fit a curve to the data for the past and project it into the future. This can be achieved either in the form of a free-hand graphical representation, or in terms of finding a mathematical equation to express the functional relationship of the data. In

[2] This excludes, of course, estimates for the "remote" past where such extrapolations would undoubtedly be illogical. In such cases the estimates are usually based on some fragmentary evidence, and are usually conjectural in character.

[3] For a detailed discussion of the methods used for postcensal estimates of population, see references (*14*) and (*15*).

either case no attempt is made to analyze the determining factors.[4] The end result is the only guide, and the main assumption is that the existent conditioning factors will remain unaltered during the period for which the forecast is made. There is certainly a rationale behind each of these curves, it being claimed that the logistic curve is the one more "in harmony with the known facts with regard to population growth and with our rational ideas on the subject" (*12*).[5]

The second possibility in dealing with population forecasts is to start with a population of a certain point in time. Usually, the latest census with its age, sex, race, and nativity distribution of the population is taken as a point of departure. No law of population growth is sought in this case. By assigning to the selected population different birth and death rates and different net migrations, variously combined, there are gradually built up different population forecasts. The assigned birth and death rates, as well as the net migrations, are taken within reasonable limits of credibility determined by the prevalent trends. The estimates worked out by P. K. Whelpton (*16*) are of this type. This is, of course, a laborious procedure, and for this reason the number of combinations has to be limited. The building up of the populations is done essentially on the basis of survival factors.[6]

The method of population forecasting described here is of the latter type. It is adaptable mainly for long-time forecasts. It is simple and flexible in its application, and it does away with the laborious procedure involved in the previous method. It utilizes the stabilized age compositions, and it is called, accordingly, "stabilized method of forecasting populations."

Stabilized age compositions are, as is well known, hypothetical structures. They are derived on the assumption that the populations grow freely under the influence of actual or postulated fertility and mortality without being disturbed either by emigration or immigration. Once "left alone," as shown by Sharpe and Lotka (*13*), such populations will ultimately, that is to say after a considerable time, conform to fixed age structures, and they will then grow at uniform rates. These ultimate age compositions are called stabilized age compositions, and the rates have been termed "true" rates of natural increase.

Being solely a function of the actual or assigned fertility and mortality of the population, independent of the present age structure, stabilized age compositions can readily be computed. Such age compositions were calculated for different true rates of natural increase,

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[4] The parameters of the curve are, of course, defined by these factors, but the character of the factors, and especially their interactions, are still obscure.

[5] This article by Dr. Reed is highly recommended as a clear statement of the problem. See also ref. (*17*).

[6] Strictly defined, Whelpton's 5-year age period–5-year time interval survival rates (*16*) are the ratios of L_{x+5}/L_x of the life tables; in other words, they are the probabilities of persons of age x to survive to age $x+5$.

TABLE 1A.—*Age distributions of stabilized populations of different true rates of natural increase (r), based on the life tables for the white population of the United States, 1929–31* [1]

Age group	r= .0250	r= .0225	r= .0200	r= .0175	r= .0150	r= .0125	r= .0100	r= .0075
Under 5	15.13	14.30	13.46	12.68	11.90	11.13	10.39	9.66
5–9	13.17	12.60	12.04	11.46	10.89	10.32	9.75	9.18
10–14	11.54	11.18	10.81	10.43	10.03	9.62	9.21	8.78
15–19	10.12	9.91	9.70	9.47	9.22	8.96	8.68	8.39
20–24	8.78	8.73	8.65	8.56	8.44	8.30	8.14	7.97
25–29	7.61	7.66	7.69	7.70	7.69	7.66	7.61	7.54
30–34	6.59	6.72	6.83	6.92	7.00	7.06	7.10	7.12
35–39	5.68	5.87	6.04	6.20	6.35	6.48	6.60	6.70
40–44	4.87	5.09	5.30	5.51	5.72	5.91	6.09	6.27
45–49	4.13	4.37	4.61	4.85	5.10	5.34	5.57	5.80
50–54	3.45	3.70	3.95	4.21	4.48	4.75	5.02	5.29
55–59	2.82	3.06	3.31	3.57	3.84	4.13	4.42	4.72
60–64	2.22	2.44	2.67	2.92	3.18	3.46	3.75	4.05
65–69	1.65	1.84	2.04	2.25	2.49	2.74	3.00	3.29
70–74	1.12	1.26	1.42	1.59	1.78	1.98	2.20	2.44
75 and over	1.11	1.28	1.47	1.68	1.91	2.17	2.46	2.78

Age group	r= .0050	r= .0025	r= .000	r= −.0025	r= −.0050	r= −.0075	r= −.0100	r= −.0125
Under 5	8.97	8.30	7.65	7.04	6.45	5.90	5.37	4.87
5–9	8.63	8.08	7.55	7.03	6.52	6.04	5.57	5.11
10–14	8.36	7.92	7.50	7.07	6.64	6.22	5.81	5.40
15–19	8.08	7.76	7.43	7.09	6.75	6.41	6.06	5.70
20–24	7.77	7.55	7.33	7.08	6.83	6.56	6.28	5.98
25–29	7.44	7.32	7.19	7.04	6.87	6.69	6.48	6.25
30–34	7.12	7.16	7.06	7.00	6.92	6.81	6.69	6.53
35–39	6.79	6.85	6.90	6.93	6.93	6.91	6.87	6.80
40–44	6.43	6.57	6.70	6.81	6.90	6.97	7.01	7.02
45–49	6.03	6.24	6.44	6.63	6.80	6.95	7.09	7.19
50–54	5.57	5.83	6.10	6.35	6.60	6.83	7.06	7.25
55–59	5.02	5.33	5.64	5.95	6.26	6.56	6.86	7.13
60–64	4.37	4.69	5.03	5.38	5.73	6.08	6.43	6.77
65–69	3.59	3.91	4.24	4.59	4.95	5.32	5.70	6.08
70–74	2.70	2.97	3.27	3.58	3.91	4.26	4.62	4.99
75 and over	3.15	3.53	3.97	4.43	4.94	5.49	6.09	6.92

[1] See footnote to table 1C.

TABLE 1B.—*Age distribution of stabilized populations for different true rates of natural increase (r), based on the life tables for the colored population of the United States, 1929–31* [1]

Age group	r= .0100	r= .0075	r= .0050	r= .0025	r= .0000	r= −.0025	r= −.0050	r= −.0075	r= −.0100
Under 5	12.09	11.35	10.64	9.93	9.27	8.61	7.98	7.38	6.80
5–9	11.26	10.71	10.16	9.69	9.08	8.55	8.02	7.51	7.01
10–14	10.61	10.22	9.82	9.40	8.99	8.57	8.14	7.72	7.30
15–19	9.88	9.63	9.37	9.09	8.79	8.49	8.17	7.84	7.51
20–24	9.02	8.91	8.78	8.62	8.45	8.26	8.06	7.82	7.58
25–29	8.15	8.15	8.13	8.08	8.02	7.94	7.83	7.71	7.56
30–34	7.31	7.40	7.47	7.52	7.56	7.58	7.57	7.54	7.49
35–39	6.50	6.66	6.81	6.94	7.07	7.17	7.25	7.32	7.36
40–44	5.69	5.91	6.12	6.31	6.51	6.69	6.85	7.00	7.13
45–49	4.89	5.14	5.39	5.63	5.88	6.12	6.35	6.56	6.77
50–54	4.09	4.35	4.62	4.89	5.17	5.44	5.72	5.99	6.26
55–59	3.29	3.55	3.81	4.09	4.37	4.66	4.96	5.26	5.56
60–64	2.55	2.78	3.03	3.28	3.56	3.84	4.14	4.45	4.76
65–69	1.88	2.08	2.29	2.52	2.76	3.02	3.29	3.58	3.88
70–74	1.29	1.44	1.61	1.79	1.99	2.21	2.44	2.68	2.95
75 and over	1.50	1.72	1.95	2.26	2.53	2.85	3.22	3.63	4.08

[1] See footnote to table 1C.

TABLE 1C.—*Age distribution of stabilized populations for different true rates of natural increase (r), based on hypothetical life table* [1]

Age group	$r=$ .0100	$r=$ .0075	$r=$ .0050	$r=$ .0025	$r=$ .0000	$r=$ −.0025	$r=$ −.0050	$r=$ −.0075	$r=$ −.0100
Under 5	9.66	8.94	8.24	7.58	6.95	6.34	5.77	5.24	4.73
5–9	9.12	8.55	7.98	7.43	6.90	6.38	5.88	5.40	4.94
10–14	8.64	8.20	7.75	7.31	6.87	6.43	6.00	5.58	5.17
15–19	8.18	7.86	7.53	7.19	6.84	6.48	6.12	5.77	5.41
20–24	7.72	7.51	7.28	7.04	6.78	6.51	6.23	5.94	5.64
25–29	7.27	7.16	7.03	6.88	6.71	6.52	6.32	6.10	5.87
30–34	6.82	6.80	6.76	6.70	6.62	6.52	6.39	6.25	6.09
35–39	6.39	6.45	6.50	6.52	6.52	6.50	6.46	6.39	6.30
40–44	5.98	6.12	6.23	6.34	6.42	6.47	6.51	6.53	6.52
45–49	5.57	5.77	5.95	6.13	6.28	6.42	6.54	6.64	6.71
50–54	5.15	5.39	5.64	5.88	6.10	6.32	6.51	6.69	6.85
55–59	4.69	4.98	5.27	5.56	5.85	6.13	6.40	6.66	6.91
60–64	4.17	4.49	4.81	5.14	5.47	5.80	6.14	6.47	6.79
65–69	3.58	3.89	4.23	4.57	4.93	5.29	5.67	6.05	6.43
70–74	2.89	3.18	3.50	3.83	4.18	4.55	4.93	5.33	5.73
75–79	2.08	2.33	2.59	2.87	3.17	3.50	3.84	4.20	4.58
80 and over	2.09	2.37	2.70	3.02	3.40	3.83	4.29	4.78	5.31

[1] The stabilized age compositions were computed on the basis of the formula given in footnote 7. The r values in tables 1A and 1B are based on the respective life tables of the Metropolitan Life Insurance Co. The r's of table 1C were derived from the hypothetical life table based on assumed ratios to the New Zealand mortalities, taken from Dublin and Lotka (*2*), page 194.

combined with the mortality rates, as expressed by three different life tables.[7] They are given in tables 1A, 1B, and 1C. The stable age compositions of table 1A are based on the life tables for the white population in the United States as of 1929–1931; those of table 1B are based on the life tables of the Negro population of 1929–1931; and those of table 1C were derived on the basis of the hypothetical life table.[8] Thus, the column headed with a true rate of natural increase of −.0025 ($r=-.0025$) in table 1A, for instance, shows the stabilized age composition of a population with such a true rate of increase, when the existing mortality rates of the white population are assumed. Likewise, the corresponding column in table 1B assumes the mortality of the Negro life table, while that of table 1C refers to the hypothetical life table. These three age compositions, it should be noted, differ, although they are based on the same true rates of natural increase. The Negro life table shows the youngest age structures because of its higher mortality; the hypothetical life table shows the oldest age structures because of its lower mortality.

As stated above, any concrete population, no matter what its prevailing age composition is, if subjected to the assumptions mentioned, would in due time reach such a stabilized age composition. Studies of different types of populations, different with respect to their true rates

[7] The following formula was used for computing the different stabilized age compositions: $c(a)=s(a)e^{-ra}/\Sigma s(a)e^{-ra}$; see ref. (*3*). These symbols have the following meanings: $c(a)$ is the proportion of persons in the stabilized population at age a; e is the natural base of logarithms; r is the calculated or postulated true rate of increase; $s(a)=p(a)=L_x$ in the corresponding life tables. This formula is equivalent to Lotka's equations (ref. *1*, page 329). See also ref. (*2*).

[8] See footnote to table 1C.

of natural increase as well as their prevailing age compositions, have shown that within two generations, about 60 years, such populations will practically attain the theoretically computed stabilized age compositions, assuming the mentioned postulates to remain unchanged (*5, 11*). Of course, such a constancy of either fertility or mortality for such a length of time is not to be expected. Yet the fact that such an adjustment could practically be accomplished within 60 years, or even less, becomes the underlying principle of the method. The use of the method will be illustrated by concrete examples.

III

The white population of the United States had about reached a stationary true rate of natural increase around 1930, and it declined below that rate in the years following (*6*). Two main questions may arise in connection with such a change. What changes in the age structure of the population can be anticipated owing to such changes in true growth? The student of education, for instance, may concern himself with the expected relative magnitude of the younger age groups with respect to the total population; on the other hand, the student of old-age pensions may be interested in the older age groups, whereas the concern of other students of social problems may be the general changes in the structure of the population. The answer to this question can be read directly from the different columns in table 1. In a population of zero rate (table 1A, $r=0$), assuming the present mortality of the white population, 7.65 percent of the total population would be under 5 years of age, and 16.51 percent 60 years and over; under the same conditions of mortality, in a population of a negative r, say $r=-.0025$, 7.04 and 17.98 percent would be in the respective age groups.[9] The same r values on the hypothetical life table would give, for the age group under 5 years, 6.95 and 6.34 percent, and for the group 60 years and over, 21.15 and 22.97 percent, respectively, showing much older populations (table 1C). In the same manner all other stabilized age compositions may be considered. The latter reveal immediately what changes in the age structures may be expected under different "true" rates of increase combined with different mortality rates.

The chief interest, however, may lie not only in finding the expected relative degree of concentration within the age groups, but also in estimating the expected actual numbers either of the total population or of the separate age groups. This may be of specific concern in dealing with populations of zero or negative r values.

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[9] The corresponding percentages in 1930, as reported by the Census, were 9.1 and 9.0. The r of $-.0025$ for the white population corresponds to a net reproduction rate of 0.93 (see table 2), which was practically the rate of the white population in the United States in 1935 (*6*).

It is a well-established fact, although not commonly realized, that zero or negative true rates of increase do not signify immediate cessation of growth or immediately declining populations. In spite of such true rates, the populations may keep on increasing for a while, owing to the so-called "favorable" age structure of the populations. This intermediate growth is of significance, for it is of interest to know what increase in numbers may be expected owing to the effects of the age factors before the population becomes either stationary or begins to decline. This is the second main question which arises in connection with declining rates of natural increase, and it, too, can be easily answered.

TABLE 2.—*True yearly rates of natural increase and their corresponding net reproduction rates, and stabilized birth and death rates, based on the life tables for the white and colored population of the United States, 1929–31, and the hypothetical life table* [1]

True yearly rates of natural increase (r)	Net reproduction rates (R_0) based on life tables			Stabilized birth rates based on life tables			Stabilized death rates based on life tables		
	White	Negro	Hypothetical	White	Negro	Hypothetical	White	Negro	Hypothetical
0.0100	1.32	1.30	1.32	22.80	27.59	20.40	12.80	17.59	10.40
0.0075	1.23	1.22	1.23	21.08	25.75	18.77	13.58	18.25	11.27
0.0050	1.15	1.14	1.16	19.44	23.99	17.20	14.44	18.99	12.20
0.0025	1.07	1.07	1.07	17.88	22.27	15.72	15.38	19.77	13.22
0.0000	1.00	1.00	1.00	16.39	20.63	14.31	16.39	20.63	14.31
−0.0025	.93	.94	.93	14.97	19.06	12.99	17.47	21.56	15.49
−0.0050	.87	.88	.87	13.64	17.56	11.76	18.64	22.56	16.76
−0.0075	.81	.82	.81	12.39	16.13	10.59	19.89	23.63	18.09
−0.0100	.75	.77	.75	11.22	14.77	9.51	21.22	24.77	19.51

[1] The net reproduction rates were computed on the basis of the formula $(1+r)^T=R_o(1)$, where "r" is the true yearly rate of increase, given in the first column of the table; T stands for the length of a generation, and R_o designates the computed net reproduction rates. The lengths of a generation (T) were calculated as 28.05, 26.30, and 28.11 years for the white, the Negro, and hypothetical life tables, respectively. The stabilized birth rates were computed as $1/\Sigma s(a)e^{-ra}$ (see footnote 7) The stabilized death rate is, of course, calculated by subtracting from the stabilized birth rate the corresponding true rate of natural increase ($1.000r$).

If it be true that within 60 years a population could adjust itself so that the prevailing age structure would be practically that of the theoretically computed stabilized age composition, then the population of 1930, if this year is taken as the starting point, would attain in 1990 the age structure of the stabilized age composition. The survivors of the population of 1930 will, of course, in 1990 constitute the age groups of 60 years and over. Their numbers are easily calculated on the basis of the survival factors (L_{x+60}/L_x), as given in table 3. It is necessary to deal in this connection with only the first nine 5-year age groups, those under 45 years of age. On this basis, assuming the mortality rates of 1929–31 to continue, there would be about 22,994,000 survivors of the 1930 white population in 1990. In a stationary population these survivors would constitute 16.51 percent of the total population (table 1A, $r=0$); in a population with an r value of $-.0025$, they would make up 17.98 percent of the population.

By dividing the number of survivors by 16.51, an estimate of population that may be expected of a zero true rate of increase is obtained;

TABLE 3.—*Survival factors for white and Negro populations, 1929–31* [1]

Age groups	L_{x+45}/L_x		L_{x+50}/L_x		L_{x+55}/L_x		L_{x+60}/L_x	
	Male	Female	Male	Female	Male	Female	Male	Female
	WHITE							
Under 5	0.82686	0.85514	0.77690	0.81609	0.71075	0.76287	0.62445	0.68970
5–9	.78871	.82664	.72155	.77273	.63395	.69862	.52374	.59903
10–14	.72724	.77739	.63894	.70284	.52787	.60265	.39678	.47451
15–19	.64543	.70834	.53323	.60737	.40081	.47823	.26006	.32816
20–24	.54134	.61527	.40691	.48445	.26402	.33242	.13634	.18381
25–29	.41435	.49253	.26885	.33797	.13884	.18688	.05230	.07659
30–34	.27440	.34430	.14170	.19038	.05338	.07803	.01290	.02121
35–39	.14528	.19449	.05473	.07971	.01323	.02167	.00158	.00320
40–44	.05657	.08182	.01367	.02224	.00163	.00329	.00006	.00018
45–49	.01431	.02302	.00171	.00340	.00007	.00019	----------	----------
50–54	.00182	.00357	.00007	.00020	----------	----------	----------	----------
55–59	.00008	.00021	----------	----------	----------	----------	----------	----------
	NEGRO							
Under 5	0.62365	0.64523	0.54744	0.56803	0.46467	0.47899	0.37932	0.38891
5–9	.55917	.57922	.47463	.48843	.38745	.39658	.29924	.30902
10–14	.47963	.49289	.39153	.40020	.30239	.31184	.21361	.22998
15–19	.39961	.40937	.30863	.31898	.21802	.23524	.13648	.16109
20–24	.32094	.33242	.22672	.24515	.14192	.16787	.07441	.10335
25–29	.23922	.25787	.14974	.17658	.07852	.10871	.03047	.05444
30–34	.15928	.18692	.08352	.11507	.03242	.05762	.00752	.01980
35–39	.08970	.12267	.03482	.06143	.00807	.02111	.00077	.00377
40–44	.03798	.06640	.00881	.02282	.00084	.00408	.00002	.00023
45–49	.00980	.02512	.00094	.00449	.00002	.00026	----------	----------
50–54	.00107	.00510	.00002	.00029	----------	----------	----------	----------
55–59	.00002	.00034	----------	----------	----------	----------	----------	----------

[1] Based on the life tables of the Metropolitan Life Insurance Co. 1929–31.

TABLE 3A.—*Hypothetical life table (both sexes)* [1]

Age group	L_x	L_{x+45}/L_x	L_{x+50}/L_x	L_{x+55}/L_x	L_{x+60}/L_x
Under 5	97,079	.90428	.87853	.84220	.78743
5–9	96,391	.88480	.84821	.79305	.71453
10–14	95,994	.85172	.79633	.71748	.60855
15–19	95,532	.80018	.72095	.61149	.46434
20–24	94,795	.72656	.61625	.46795	.29698
25–29	93,792	.62284	.47295	.30015	.14639
30–34	92,537	.47937	.30422	.14837	.05083
35–39	91,148	.30886	.15063	.05161	.01151
40–44	89,656	.15314	.05247	.01170	----------
45–49	87,787	.05358	.01195	----------	----------
50–54	85,287	.01230	----------	----------	----------
55–59	81,760	----------	----------	----------	----------
60–64	76,443	----------	----------	----------	----------
65–69	68,874	----------	----------	----------	----------
70–74	58,417	----------	----------	----------	----------
75–79	44,359	----------	----------	----------	----------
80–84	28,152	----------	----------	----------	----------
85–89	13,730	----------	----------	----------	----------
90–94	4,704	----------	----------	----------	----------
95–99	1,049	----------	----------	----------	----------

[1] Based on hypothetical life table given in ref. (*2*), p. 194.

by using 17.98 as the divisor, the expected numbers are estimated on the basis of $r = -.0025$. Obviously, once the number of survivors has been computed, a simple procedure in itself, as many different r values as desired may be used and corresponding population estimates immediately obtained.

IV

Based on a zero true rate of natural increase, the white population of the United States was estimated by this method as 139,273,000 in

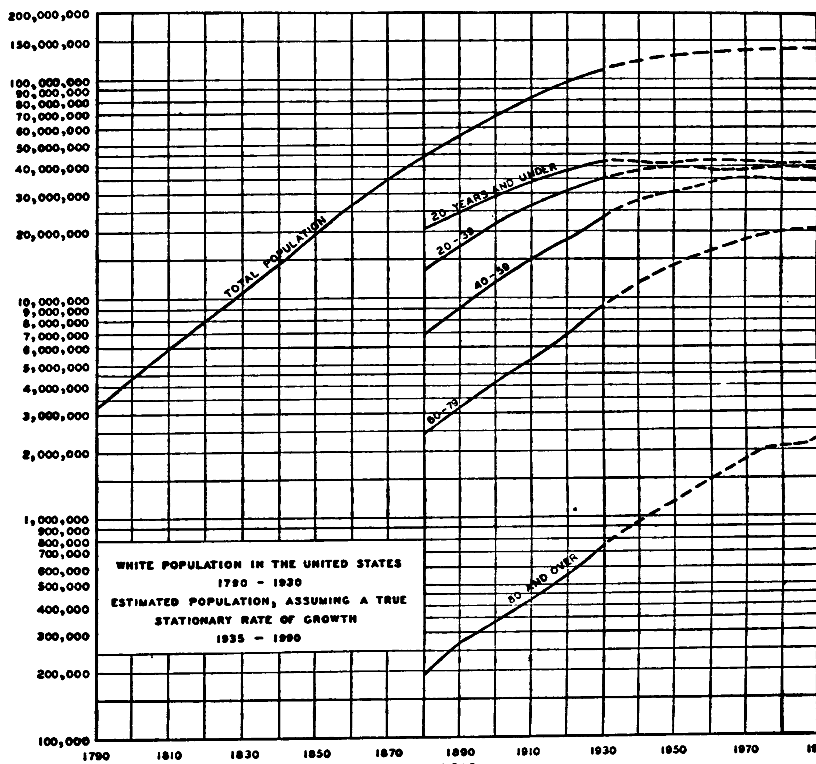

FIGURE 1.

1990. By the direct method, namely, using the survival factors by 5-year age periods (L_{x+5}/L_x) and gradually building up the younger age groups,[10] an estimate of 137,844,000 white persons was obtained for 1990 (fig. 1). The stabilized method gave an overestimate of about 1 percent when compared with the estimate by the direct method. As seen from table 4, the percentage differences for 1980

[10] For a concrete example of this procedure see ref. (3).

and 1985 are practically of no significance. Even the estimate for 1975 is only 1 percent short of that obtained by the direct method.[11]

To check further the accuracy of such estimates, comparisons between this and the direct method were made for Tennessee, representing potentially a rapidly growing population, and Illinois, representing a potentially declining population. In 1930 Tennessee registered a net reproduction rate of 1.33, which corresponds to a true yearly rate of increase of about .0100 (see table 2); in 1930 Illinois

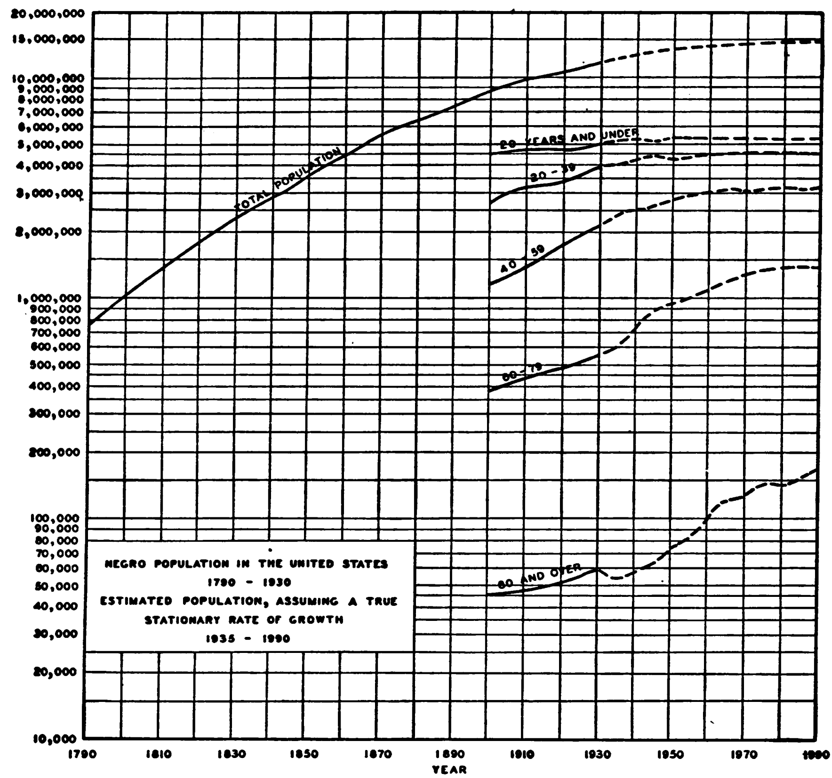

FIGURE 2.

had a net reproduction rate of .90, corresponding to a true yearly rate of increase of —.00375.[12] There were also computed by the two methods estimates for the Negro population, assuming a true zero rate of growth and the Negro mortality rates of 1929–1931 (fig. 2).

Apparently the greatest discrepancies (table 4) were found in the estimates of the Negro population, and these were due to no fault of

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[11] Theoretically, any single age group should suffice as a basis for such estimates. One could, for instance, use only the group under 5 years of age in 1930, and by dividing its survivors ($L_{62.5}/L_{2.5}$) by the percent of population in the 60–64 group of the stabilized population, obtain an estimate of the population in 1990. Such a procedure would, however, increase the probable margins of errors, as the percent of each group is small in relation to the total population, and the errors would thus be accentuated. Therefore, all survivors making up the age group 45 and over were used for estimating the population in 1975, all survivors of 50 and over for 1980, all survivors of 55 and over for 1985, and the survivors of 60 and over for 1990.

[12] See footnote to table 4.

the method, but to the inadequacy of the basic Negro population data.[13] All other discrepancies seemingly fluctuate around 1 percent.

V

It should be reemphasized that the main purpose of this method is to supply a procedure by which reliable population forecasts may be obtained with a minimum of effort. Once such estimates are obtained for the total population, one can, of course, without difficulty compute estimates for the various age groups by applying to the totals the percental age distribution of the corresponding stabilized population. It is preferable to make such estimates for age groups larger than 5-year age intervals. Total population estimates computed by this method are given in table 5 for the white and Negro populations in the United States assuming different r values in combination with different life tables. Similar estimates can be calculated for any State in the Union or for any particular population class, either by postulating certain r values or by taking the actual ones.[14]

TABLE 4.—*Comparison of population estimates by the stabilized and direct methods*[1]

Population class	Net reproduction rate (R_0)	True rate of increase (r)	Year	Estimated populations (in thousands): Method: Direct	Estimated populations (in thousands): Method: Stabilized	Percentage difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(6):(5)
U. S. white	1.00	0.0000	1975	136,541	135,159	−1.0
Do	1.00	0.0000	1980	137,260	136,833	−0.3
Do	1.00	0.0000	1985	137,682	138,257	+0.4
Do	1.00	0.0000	1990	137,844	139,273	+1.0
Tennessee	1.33	0.0100	1975	3,882	3,805	−2.0
Do	1.33	0.0100	1980	4,102	4,045	−1.4
Do	1.33	0.0100	1985	4,326	4,288	−0.9
Do	1.33	0.0100	1990	4,556	4,528	−0.6
Illinois	.90	−0.0375	1975	7,758	7,689	−0.9
Do	.90	−0.0375	1980	7,632	7,600	−0.4
Do	.90	−0.0375	1985	7,495	7,493	0.0
Do	.90	−0.0375	1990	7,351	7,363	+0.2
U. S. Negro	1.00	0.0000	1975	14,368	13,818	−3.8
Do	1.00	0.0000	1980	14,431	13,917	−3.6
Do	1.00	0.0000	1985	14,474	13,995	−3.3
Do	1.00	0.0000	1990	14,502	14,041	−3.2

[1] The net reproduction rates for Tennessee and Illinois (col. 2) were taken from Karpinos (6). The corresponding r's (col. 3) are based on table 2 of this paper. The r for Illinois was interpolated on an arithmetic basis as the midvalue of $r-.0025$ and $r-.0050$. All estimates are based on the mortality rates of 1929–31.

[13] The abnormal sex ratios of the Negro population are chiefly responsible for the greater discrepancies. Estimates confined to the Negro female population gave the percentage differences as −1.0, 0.6, −0.4, and −0.3 for the years 1975, 1980, 1985, and 1990, respectively.

[14] True rates of natural increase (r) for the total white population of each State in the United States in 1929–1931 were published by Dublin and Lotka (*2*). Net reproduction rates for the white population of each State, for each population class within the State (rural farm, rural nonfarm, total urban, and for groups of cities of different sizes), and for the larger individual cities were published by Karpinos (*6, 7*). Their corresponding r values are easily interpolated from table 2. The net reproduction rates and the true rates of natural increase for the Negro population in 1930, by States, are given in ref. (*8*).

The first step in this procedure is to compute the survivors of the given population on the basis of the desired life table. In computing the survivors for 1975, taking 1930 as the starting point, L_{x+45}/L_x is used; for 1980 L_{x+50}/L_x is used, L_{x+55}/L_x for 1985, and L_{x+60}/L_x for 1990. The calculated number of survivors is then divided by the proportion of the total population that these survivors constitute in the respective stabilized populations.

TABLE 5.—*Population estimates in the United States in 1975, assuming different true rates of growth and different mortality rates*

Assumed mortality rates [1]		Assumed true rates of growth (r per 1,000)		Projected populations, 1975 [1] (in millions)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
White	*Negro*	*White*	*Negro*	*White*	*Negro*	*Total*
WLT	NLT	2.5	2.5	145.7	15.4	161.1
WLT	NLT	0.0	0.0	136.5	14.4	150.9
WLT	NLT	0.0	2.5	136.5	15.4	151.9
WLT	NLT	−2.5	0.0	128.3	14.4	142.7
WLT	NLT	−2.5	−2.5	128.3	13.4	141.7
WLT	WLT	2.5	2.5	145.7	17.9	163.6
WLT	WLT	0.0	0.0	136.5	16.8	153.3
WLT	WLT	0.0	2.5	136.5	17.9	154.4
WLT	WLT	−2.5	0.0	128.3	16.8	145.1
WLT	WLT	−2.5	−2.5	128.3	15.8	144.1
HLT	WLT	2.5	2.5	154.4	17.9	172.3
HLT	WLT	0.0	0.0	145.0	16.8	161.8
HLT	WLT	0.0	2.5	145.0	17.9	162.9
HLT	WLT	−2.5	0.0	136.5	16.8	153.3
HLT	WLT	−2.5	−2.5	136.5	15.8	152.3

[1] WLT and NLT indicate the White and Negro life tables as of 1929–31. HLT stands for the hypothetical life table. The data are from Karpinos (8).

The method assumes a constancy of fertility and mortality. This shortcoming is obviously overcome by the fact that as many estimates as desired may be obtained by assuming different r values and different mortality rates. Concretely, suppose that the white population in the United States will increase for a certain period at a zero r, then at $r=-.0025$, and later at $r=-.0050$. The first r value would give an estimate of 135 million persons for 1975; the second r value would estimate the population as 127 million for the same year; and the third would bring down the estimate to 120 million. It may thus be very reliably expected, on the basis of these estimates, that the white population of the United States would be about 127 million persons. This would obviously be equivalent to a continuous zero r. Moreover, other estimates based on the hypothetical life table may be added, as was partially done in table 5, and from all these estimates either one estimate may be obtained or the various estimates listed separately, the assumed r's and mortality being indicated.

The other presupposition, absence of migration, which is involved in determining the stabilized age compositions, seems to be of no great importance as a contributing factor to the future growth of the population of the United States as a whole. Migration, however, is unquestionably significant in estimating the population of individual States. Yet such estimates, without taking migration into account, so easily

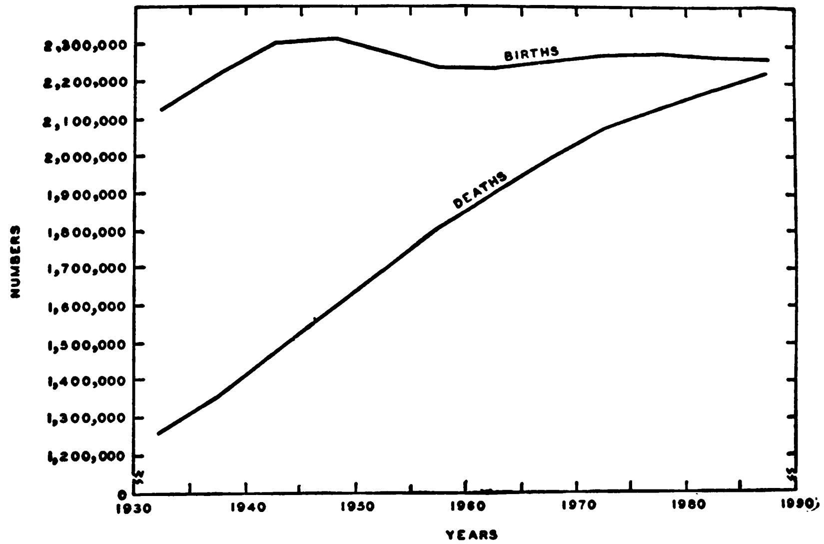

FIGURE 3A.—Estimated births and deaths of the white population in the United States (1935–90) assuming a stationary rate of growth and the mortality rates of 1930.

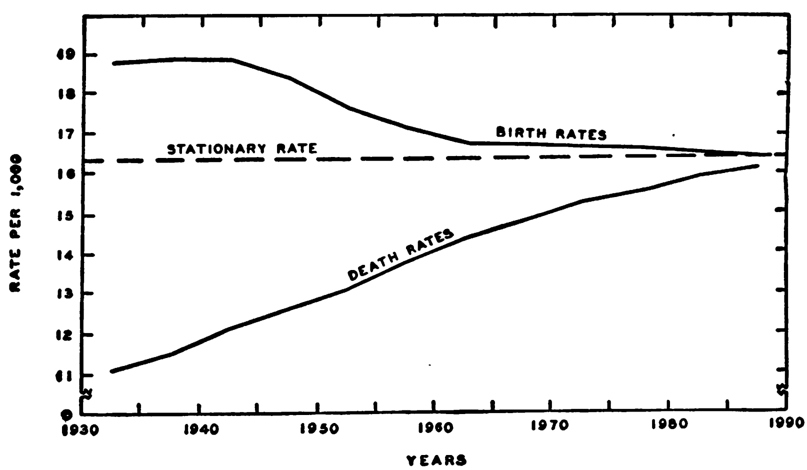

FIGURE 3B.—Estimated birth and death rates of the white population in the United States (1935–90) assuming a stationary rate of growth and the mortality rates of 1930.

obtained, appear to be of marked interest even for States and cities, since they reveal immediately the size and structure of the population which may be expected in a State or city or for a particular population group if the increase continues according to a given or assigned fertility and mortality. Such estimates add meaning to the indices of reproductivity. Furthermore, inter- and intrastate migrations are of such undetermined character that, no matter what assumptions are made, and these have to be limited, migration estimates appear to be of questionable value, especially from the point of view of long-range forecasts.

At the same time this method may be easily used for predicting the expected number of births and deaths under the assumed or assigned fertility and mortality. For example, the expected number of the white population for the United States based on a zero true rate of increase was estimated for 1975 as 136.5 million persons. The corresponding birth and death rates, given in table 2, were both computed as 16.39. Evidently, about 2.2 million (136.5×.1639) births

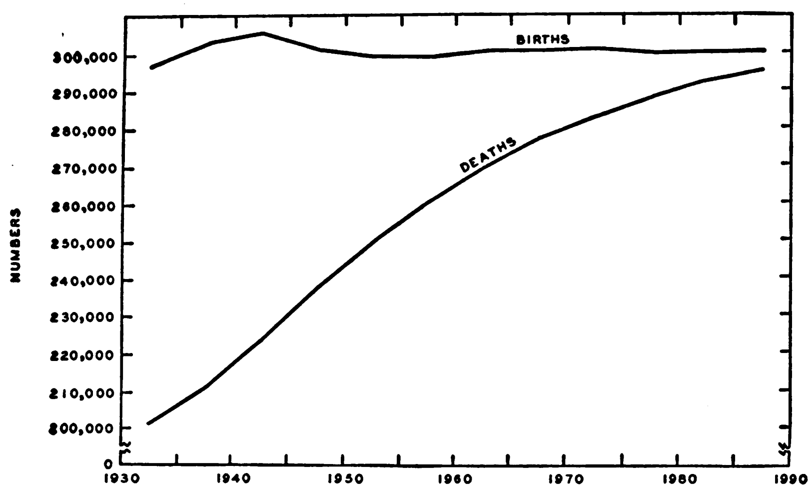

FIGURE 4A.—Estimated birth and death rates of the Negro population in the United States (1935–90) assuming a stationary rate of growth and the mortality rates of 1930.

may be expected annually and, of course, the same number of deaths for a stationary population (see fig. 3). A true rate of increase of —2.5 per 1,000 would bring the estimated white population of the United States in 1975 to about 128.3 million persons (table 5), and the annual number of births and deaths to 1.9 and 2.2 millions, respectively, the birth rate for such a true rate of increase being 14.97 and the death rate 17.47 (table 2). On the basis of a zero true rate of increase on the hypothetical life table, the estimated white population would be about 145 millions, and the expected annual births and deaths 2.1 millions. Obviously, even with lower mortality an annual minimum of about 2 million births would be required to keep the white population in the United States from ultimate decline. With the existing mortality rate, about 300 thousand births (14.4 million×.2063; see tables 2 and 5) among Negro population would be needed annually to preclude a potential decline in that group (see fig. 4), and about 275 thousand births, assuming that the mortality of the Negro will fall to the level of the mortality of the whites as of 1930 (16.8 million × .1639).

In the same manner, the expected number of births and deaths for any population can be computed, based on any desired fertility and mortality. It is of specific significance to the student of population to be able to estimate the number of births and deaths necessary for a given population to maintain its numbers; such estimates should prove a very helpful guide in population analysis.

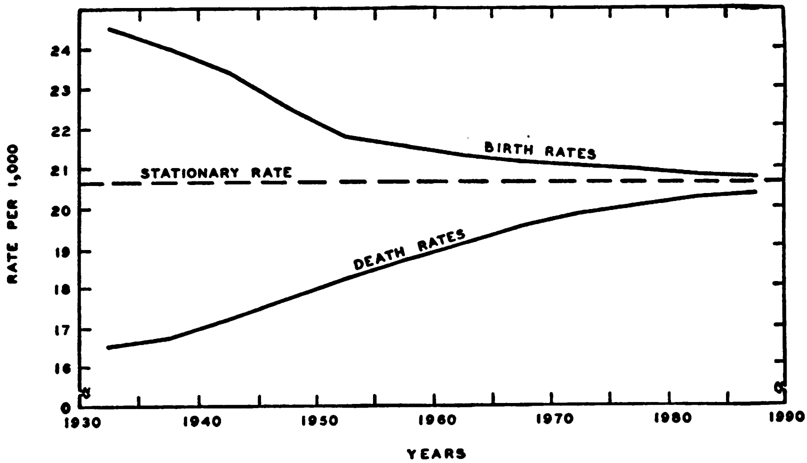

FIGURE 4B.—Estimated births and deaths of the Negro population in the United States (1935–90) assuming a stationary rate of growth and the mortality rates of 1930.

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STUDIES OF A FILTER-PASSING INFECTIOUS AGENT ISOLATED FROM TICKS

V. FURTHER ATTEMPTS TO CULTIVATE IN CELL-FREE MEDIA. SUGGESTED CLASSIFICATION [1]

By HERALD R. COX, *Associate Bacteriologist, United States Public Health Service*

In a previous paper (*1*) the characteristics of the filter-passing rickettsia-like organism isolated from the Rocky Mountain wood tick, *Dermacentor andersoni*, were described, and it was shown to be pathogenic for certain animals as well as man (*2*, *3*, *4*). The successful cultivation of this agent in modified Maitland tissue culture was also reported, and its failure to grow in ordinary bacteriological media or to survive beyond the sixth subculture in cell-free media of the type commonly employed for growing bartonellae. In the experiments in which bartonella media were used, the cultures were incubated at 37.5° and 32° C., temperatures somewhat higher than commonly employed for these organisms.

These tests have, therefore, been repeated to determine (*a*) if this agent can be maintained in serial passage when incubated at 28° C., and (*b*) how long it can survive without transfer at this temperature.

MATERIALS AND METHODS

Two types of media were employed: (*a*) Noguchi's leptospira medium (*5*) prepared with rabbit serum,[2] and (*b*) the same medium containing, in addition, 0.2 percent of each of the following sugars: Glucose, lactose, sucrose, maltose, and inulin.

[1] Contribution from the Rocky Mountain Laboratory, Hamilton, Mont., Division of Infectious Diseases, National Institute of Health.

[2] See the following table:

	Parts
0.9 percent NaCl	800
Fresh rabbit serum	100
2.0 percent nutrient agar (pH 7.4)	100
Rabbit hemoglobin (made by laking 1 part of defibrinated blood with 3 parts of distilled water)	10 to 20

Two infected guinea pig spleens were used to prepare separate 5-percent tissue suspensions in Tyrode's solution. Each suspension was centrifuged (2,500 r. p. m. for 20 minutes) and the supernatant portion passed through a new Berkefeld N filter. Twelve tubes of each type of medium each received 1 cubic centimeter of one filtrate and an equal number each received 1 cubic centimeter of the other. Filtrates were used to eliminate the possibility of cells being present in the inoculum. The tubes were stoppered with cotton and incubated at 28° C.

In the attempt to maintain the infectious agent in serial passage, 2 series of transfers were initiated, one from a tube without sugars (experiment 1) and the other from a tube with sugars (experiment 2). The successive subcultures were transferred every 8 to 14 days. The dilution factor was approximately 1 to 4. At each subtransfer Giemsa stained smears were prepared and examined for visible organisms, and a titration test was carried out in guinea pigs to determine the end point of infectivity of the culture material. For the latter tests 1 cubic centimeter amounts of the undiluted culture material and of progressive tenfold dilutions were injected intraperitoneally. These dilutions were made in a mixture containing equal volumes of filtered human ascitic fluid and Tyrode's solution. All animals that survived were later tested for immunity.

In the tests to determine longevity a filtrate-inoculated tube without sugars (experiment 3) and one with sugars (experiment 4) were selected at irregular intervals and tested by smears and by guinea pig inoculation of each culture and its decimal dilutions in the same manner as that described for experiments 1 and 2.

EXPERIMENTAL DATA

Experiments to maintain the infectious agent in serial transfer.—There was no apparent growth of the infectious agent in either of the original culture tubes inoculated with the spleen filtrates or in any of the transfer tubes. Furthermore, no organisms were ever observed in the Giemsa stained smears.[3]

Tables 1 and 2 present the data pertaining to the guinea pig inoculation tests made with the successive subcultures in experiments 1 and 2, respectively. These data suggest that multiplication of the infectious agent did not occur since there was a gradual increase in the incubation period in inoculated guinea pigs and a gradual decrease in the infectivity of the inocula through 6 subcultures. Material from the seventh and eighth subcultures caused no reaction.

[3] These experiments were controlled by cultivating 2 strains of *Bartonella bacilliformis* under the same conditions. No difficulty was had in maintaining these cultures and typical, good growth was observed in all transfer culture tubes. The writer is indebted to Dr. Peter K. Olitsky of the Rockefeller Institute for Medical Research for one of the strains, and to Dr. David Weinman of Harvard University Medical School for the other.

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Further evidence of absence of multiplication is afforded by the fact that the infectious agent did not survive without a decrease in the infective titer. Thus, in both experiments the Berkefeld filtrates used as inocula were infectious in a dilution of 1:100,000, while the infective end point was reached in the sixth subculture tubes, representing a dilution of approximately 1:16,000 in terms of the original inocula. If the infectious agent had survived without loss the subculture tubes of the seventh, and possibly even the eighth, transfer would have been infectious.

TABLE 1.—*Experiment 1: Test data showing lack of multiplication of the infectious agent in leptospira medium without sugar. (Cultures initiated with Berkefeld N filtrate of suspension of spleen tissue from guinea pig A26157)*

Material titrated	Date	Day on which transferred	Dilution factor in terms of original inoculum	Incubation period, in days, of guinea pigs injected with undiluted and decimal dilutions of the initial inoculum and of the serial subcultures in leptospira medium							
				Dilutions tested							
				10^{0}	10^{1}	10^{2}	10^{3}	10^{4}	10^{5}	10^{6}	10^{7}
Berkefeld N filtrate inoculum	Dec. 16, 1938	------	---------	3, 5, 6	7	6	8	9	10	[1]N. I.	N. I.
Original leptospira culture	Dec. 27, 1938	11th	1:4	5	6	8	10	N. I.	N. I.	N. I.	------
First subculture	Jan. 5, 1939	9th	1:16	7	9	7	N. I.	N. I.	N. I.	N. I.	------
Second subculture	Jan. 13, 1939	8th	1:64	6	12	7	8	N. I.	N. I.	------	------
Third subculture	Jan. 23, 1939	10th	1:256	10	10	12	11	N. I.	N. I.	------	------
Fourth subculture	Feb. 2, 1939	8th	1:1,024	11	16	N. I.	N. I.	N. I.	N. I.	------	------
Fifth subculture	Feb. 10, 1939	8th	1:4,096	9	N. I.	N. I.	N. I.	N. I.	------	------	------
Sixth subculture	Feb. 20, 1939	10th	1:16,384	11	N. I.	N. I.	N. I.	------	------	------	------
Seventh subculture	Mar. 2, 1939	10th	1:65,536	N. I.	N. I.	N. I.	N. I.	------	------	------	------
Eighth subculture	Mar. 16, 1939	14th	1:262,144	N. I.	N. I.	N. I.	N. I.	------	------	------	------

[1] N. I.=animal failed to react and found nonimmune on subsequent test.

TABLE 2.—*Experiment 2: Test data showing lack of multiplication of the infectious agent in leptospira medium containing glucose, lactose, sucrose, maltose and inulin. (Cultures initiated with Berkefeld N filtrate of suspension of spleen tissue from guinea pig A26158.)*

Material titrated	Date	Day on which transferred	Dilution factor in terms of original inoculum	Incubation period, in days, of guinea pigs injected with undiluted and decimal dilutions of the initial inoculum and of the serial subcultures in leptospira medium							
				Dilutions tested							
				10^{0}	10^{1}	10^{2}	10^{3}	10^{4}	10^{5}	10^{6}	10^{7}
Berkefeld N filtrate inoculum	Dec. 16, 1938	------	---------	3, 3, 3	7	5	6	5	12	[1]N. I.	N. I.
Original leptospira culture	Dec. 27, 1938	11th	1:4	6	6	9	9	11	N. I.	N. I.	------
First subculture	Jan. 5, 1939	9th	1:16	6	7	8	10	N. I.	N. I.	------	------
Second subculture	Jan. 13, 1939	8th	1:64	7	9	10	9	N. I.	N. I.	------	------
Third subculture	Jan. 23, 1939	10th	1:256	9	13	10	N. I.	N. I.	------	------	------
Fourth subculture	Feb. 2, 1939	8th	1:1,024	8	10	11	N. I.	N. I.	------	------	------
Fifth subculture	Feb. 10, 1939	8th	1:4,096	10	11	10	N. I.	N. I.	------	------	------
Sixth subculture	Feb. 20, 1939	10th	1:16,384	15	N. I.	N. I.	N. I.	N. I.	------	------	------
Seventh subculture	Mar. 2, 1939	10th	1:65,536	N. I.	N. I.	N. I.	N. I.	------	------	------	------
Eighth subculture	Mar. 16, 1939	14th	1:262,144	N. I.	N. I.	N. I.	N. I.	------	------	------	------

[1] N. I.=animal failed to react and found nonimmune on subsequent test.

These results were substantiated by experiments in which 0.5 cubic centimeters of the undiluted leptospira subcultures of the fourth, fifth, seventh, and eighth transfers of both series were inoculated into duplicate tissue cultures of the modified Maitland or Rivers type.[4] In both tests typical rickettsia-like organisms were found in the tissue cultures representing the fourth and fifth leptospira media transfers, but not in those representing the seventh and eighth passages.

Length of survival without transfer in cell-free media.—Tables 3 and 4 present the data pertaining to the animal inoculation tests made in experiments 3 and 4. These data show that in each of the experiments the infectious agent survived without transfer for at least 109 days in cell-free media without appreciable loss of infective titer. No evidence was obtained that the infectious agent was multiplying in the cell-free medium. The only apparent change in the culture medium was a concentration due to evaporation to approximately one-half the original volume. No evidence of growth was observed in any of the tubes, nor was it possible at any time to demonstrate the organism in the Giemsa-stained smears prepared from the culture media.

DISCUSSION

The results of these experiments confirm the work previously reported (*1*), indicating that the rickettsia-like agent being studied cannot be cultivated and carried in serial passage in cell-free media commonly employed for bartonellae.

TABLE 3.—*Experiment 3: Data showing survival of the infectious agent in nontransferred cultures of leptospira medium without sugar. (Cultures initiated with Berkefeld N filtrate of suspension of spleen tissue from guinea pig A26157)*

Material titrated	Date	Day tested	Incubation period, in days, of guinea pigs injected with undiluted and decimal dilutions of the initial inoculum and of the leptospira medium cultures							
			Dilutions tested							
			10^{0}	10^{1}	10^{2}	10^{3}	10^{4}	10^{5}	10^{6}	10^{7}
Berkefeld N filtrate inoculum	Dec. 16, 1938	-------	3, 5, 6	7	6	8	9	10	[1] N. I.	N. I.
Culture 1	Dec. 27, 1938	11th	5	6	8	10	N. I.	N. I.	N. I.	-------
Culture 2	Jan. 5, 1939	20th	5	5	8	10	N. I.	N. I.	N. I.	-------
Culture 3	Jan. 13, 1939	28th	7	8	9	8	15	N. I.	N. I.	-------
Culture 4	Feb. 2, 1939	48th	6	8	11	12	N. I.	N. I.	N. I.	-------
Culture 5	Feb. 20, 1939	66th	7	8	8	9	10	N. I.	-------	-------
Culture 6	Mar. 3, 1939	77th	6	6	10	12	N. I.	N. I.	-------	-------
Culture 7	Apr. 4, 1939	109th	10	8	12	14	15	N. I.	-------	-------

[1] N. I.=animal failed to react and found nonimmune on subsequent test.

[4] These consisted of minced yolk sac of the developing chick embryo suspended in filtered human ascitic fluid. After 8 to 12 days incubation at 37.5° C., smears were prepared from the cellular portion and stained with Giemsa.

TABLE 4.—*Experiment 4: Data showing survival of the infectious agent in nontransferred cultures of leptospira medium containing glucose, lactose, sucrose, maltose, and inulin. (Cultures initiated with Berkefeld N filtrate of suspension of spleen tissue from guinea pig A26158)*

Material titrated	Date	Day tested	Incubation period, in days, of guinea pigs injected with undiluted and decimal dilutions of the initial inoculum and of the leptospira medium cultures							
			Dilutions tested							
			10^0	10^1	10^2	10^3	10^4	10^5	10^6	10^7
Berkefeld N filtrate inoculum	Dec. 16, 1938	....	3, 3, 3	7	5	6	5	12	[1] N. I.	N. I.
Culture 1	Dec. 27, 1938	11th	6	6	9	9	11	N. I.	N. I.	N. I.
Culture 2	Jan. 5, 1939	20th	5	7	7	10	13	N. I.	N. I.	....
Culture 3	Jan. 13, 1939	28th	4	5	7	9	12	14	N. I.	....
Culture 4	Feb. 2, 1939	48th	6	6	9	11	10	15	N. I.	....
Culture 5	Feb. 20, 1939	66th	6	6	10	N. I.	N. I.	N. I.	N. I.	....
Culture 6	Mar. 3, 1939	77th	5	7	7	9	10	N. I.	N. I.	....
Culture 7	Apr. 4, 1939	109th	6	9	9	10	12	N. I.	N. I.	....

[1] N. I.=animal failed to react and found nonimmune on subsequent test.

Its ability to pass filters that ordinarily retain bacteria, bartonellae, and rickettsiae, and to survive for relatively long periods in cell-free leptospira media and its failure to produce agglutinins for *Proteus* strains of bacteria would, perhaps, justify the placing of this organism in a new genus. However, it is deemed most suitable to classify it tentatively with the rickettsiae. Since the outstanding characteristic differentiating this agent from the known pathogenic rickettsiae is its property of filterability, the name *Rickettsia diaporica* [5] (*diaporica* is derived from the Greek word and means having the property or ability to pass through) is proposed.

CONCLUSION

The results of these experiments confirm the work previously reported (*1*), indicating that the rickettsia-like agent being studied cannot be cultivated and carried in serial passage in cell-free media commonly employed for the growth of bartonellae.

SUMMARY

Further attempts to cultivate the filter-passing infectious agent isolated from the Rocky Mountain wood tick, *Dermacentor andersoni*, in cell-free leptospira media have failed. It survived in serial passage through six subcultures, but was not demonstrated in later subcultures. In culture tubes kept at 28° C. it survived for at least 109 days with no appreciable loss of infective titer. The name *Rickettsia diaporica* is proposed for this organism.

[5] The writer is indebted to Prof. W. P. Clark of the University of Montana for the derivation of this name.

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THE INFLUENCE OF TRANSPLANTED NORMAL TISSUE ON BREAST CANCER RATIOS IN MICE*

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In earlier publications (*1, 2*) it was mentioned that the incidence of breast cancer for a few BAF_1 and BAF_2 hybrid females which had been inoculated with normal tissue from cancer stock animals was higher than was observed in the control groups. Owing to these observations the inoculated mice were omitted from tabulations of these classes in later papers (*3, 4*).

Grafts of splenic, thymic, and lactating mammary tissue were used as inocula, and were injected by means of a trochar. The spleens and thymus glands were from "A" high cancer stock females which averaged 4 to 5 weeks in age. The spleens were cut into five approximately equal parts and the thymus divided by lobes before being injected. The donors of the mammary glands were lactating "A" stock females which had cast their first or second litters.

The age of the mice when they were inoculated varied. Some were 4 to 5 weeks old and others had had their first litters. As far as could be determined with the number used there was little or no difference in the results. The tissues were inoculated into two groups of "B" (C57 black) stock females, one nursed by C57 black females and the other nursed by females from high tumor stocks. The BAF_1 mice were obtained by mating "B" strain females to "A" stock males and the young nursed their mothers. The offspring were mated *inter se* to obtain the BAF_2 hybrids. All the injected mice were used as breeders.

In table 1 the different classes of mice are tabulated according to the tissue inoculated, and in table 2 all of the inoculated animals of each class are grouped and compared with the control animals. Con-

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sidering the stocks from the standpoint of the tissue inoculated, it will be noted that, with the exception of the "B" stock mice nursed by high tumor mothers and receiving mammary tissue grafts, there is little variation in the observed tumor percentages. The breast tumor ages, based on very small numbers, are of little significance.

TABLE 1.—*Results obtained following the transplantation of normal tissue from potentially cancerous individuals into low tumor stock mice*

Stock	Nursed by	Tissue inoculated	Number	Percent cancer	Average age, in months	
					Cancerous	Noncancerous
B	Low Ca. ♀	Mammary	13	0		15.7
B	High Ca. ♀	do	8	37.5	13.9	19.2
BAF_1	Low Ca. ♀	do	14	21.5	15.0	16.4
B	do	Thymus	13	0		14.9
B	High Ca. ♀	do	11	9.1	17.5	18.7
B	Low Ca. ♀	Spleen	22	4.5	17.7	14.9
B	High Ca. ♀	do	18	5.6	10.3	16.1
BAF_1	Low Ca. ♀	do	32	21.9	15.6	20.2
BAF_2	do	do	11	18.2	16.0	18.2

TABLE 2.—*Comparison of data in animals inoculated with normal tissue and in groups serving as controls. All were used as breeders*

Stock	Nursed by	Class	Number	Percent cancer	Average age, in months	
					Cancerous	Noncancerous
B	Low Ca. ♀	Inoculated	48	2.1	17.7	15.1
B	High Ca. ♀	do	37	13.5	13.9	17.4
BAF_1	Low Ca. ♀	do	46	21.7	15.4	19.0
BAF_2	do	do	11	18.2	16.0	18.2
B	do	Controls	586	.5	21.4	20.8
B	High Ca. ♀	do	104	10.6	13.2	16.6
BAF_1	Low Ca. ♀	do	108	1.9	18.0	21.1
BAF_2	do	do	112	0		20.7

One "B" strain female developed breast cancer in the groups inoculated with grafts from "A" stock mice (table 2). The percentage was 2.1 for the 48 mice used. The control breast tumor ratio for this group taken from Little, Murray, and Cloudman (*5*) was 0.5 percent. The number of fostered "B" stock females receiving grafts was 37, of which 13.5 percent developed breast cancer as compared with a ratio of 10.6 percent for the control fostered animals. The breast tumor ratios for the inoculated and control BAF_1 hybrid mice were 21.7 percent and 1.9 percent respectively. Similar data for the BAF_2 hybrids were 18.2 percent and 0 percent.

Seventeen BAF_2 mice descended from the inoculated BAF_1 females were observed to have a breast tumor incidence of 29.4 percent

(±7.7). This ratio was 11.2 percent (±11.0) greater than was recorded for the inoculated mice of this generation.

The differences observed for the inoculated and control mice of the respective "B" stock classes were not mathematically significant (table 3). The degree of significance between the inoculated fostered and the inoculated control "B" stock mice was 2.9×P. E., and for the control unfostered and the control fostered series it was 5.1×P. E. The difference in the observed breast tumor ratios between the injected and noninjected BAF_1 mice was 19.8 percent (±4.2), or 4.7×P. E. As only 11 BAF_2 mice were inoculated, the recorded difference of 18.2 percent (±7.8) was not great enough to be significant. BAF_2 females descended from inoculated BAF_1 females gave an incidence 29.4 percent (3.8×P. E.) greater than the control BAF_2 mice. There were 28 BAF_2 females either inoculated or descended from inoculated mothers having a tumor ratio of 25 percent (±5.4). The degree of significance was 4.6×P. E. when this percentage was compared with that observed for the control class.

TABLE 3.—*Comparison of ratios obtained in the control and inoculated groups, and degree of significance between ratios*

Ratio	Stock	Nursed by	Class	Number	Percent cancer	Difference between ratios
						1 and 2=1.6 percent±1.4 or 1.1×P. E.
1	B	Low Ca. ♀	Inoculated	48	2.1±1.4	1 and 3=11.4 percent±4.0 or 2.9×P. E.
2	B	do	Controls	586	.5± .2	
3	B	High Ca. ♀	Inoculated	37	13.5±3.8	2 and 4=10.1 percent±2.0 or 5.1×P. E.
4	B	do	Controls	104	10.6±2.0	3 and 4=2.9 percent±4.5 or 0.6×P. E.
5	BAF_1	Low Ca. ♀	Inoculated	46	21.7±4.1	5 and 6=19.8 percent±4.2 or 4.7×P. E.
6	BAF_1	do	Controls	108	1.9± .8	
7	BAF_2	Low Ca. ♀	Inoculated	11	18.2±7.8	7 and 8=18.2 percent±7.8 or 2.3×P. E.
8	BAF_2	do	Controls	112	0.0	

DISCUSSION

In the etiology of inherited breast cancer in "A" and "B" stock mice and their hybrids it has been assumed that three "influences" must be present (*3*, *4*):

(*a*) The breast cancer producing influence transmitted in the milk of high breast tumor stock females.

(*b*) An inherited susceptibility.

(*c*) A hormonal stimulation.

In these studies it has been observed that very few animals develop breast tumors if one or more of the "influences" are absent. If tumors develop in such animals it is unusual to find that they are transmitted to their progeny.

Experiments determining the breast tumor incidence in the "B", or C57 black, stock mice following foster nursing or forced breeding (the functional test as described by Bagg) have demonstrated subline variations within this strain (*4*, *6*, *7*, *8*). In this work the difference observed between the "B" stock mice nursed by low cancer mothers and those nursed by high cancer stock females may be explained on this basis. No significant variation was recorded between the inoculated and control mice of these respective classes. Thus, the few breast tumors that developed in fostered "B" stock mice which had been inoculated with normal tissue may have been influenced by the effects of foster nursing.

In the inoculated BAF_1 and the BAF_2 mice which were injected or were descended from inoculated BAF_1 females, ratios were observed which were mathematically significant as compared with those observed for the control groups. According to our theory of breast cancer development, the BAF_1 mice would lack only the "influence" which is generally obtained from nursing high tumor stock females. First generation mice should receive the breast cancer susceptibility complex from their "A" stock fathers. Seventy-five percent of the BAF_2 should theoretically need only the influence of nursing, while the others should lack, in addition, the susceptibility constitution. When normal tissue from 4- to 5-week-old females of the "A" high tumor stock was transplanted into these hybrid animals, it is probable that the so-called "breast cancer producing influence" was present in the grafted tissue in a sufficient quantity to initiate the development of breast cancer in some mice in the presence of the other "influences." This might indicate that this influence is present not only in the milk of potentially cancerous stock females but is probably present in many, if not all, of the tissues of such individuals. The reason why it is not transferred *in utero* is not apparent.

BAF_1 females receiving the "breast cancer producing influence" by way of transplanted tissues are able to transmit the influence, by nursing, to some of their BAF_2 progeny. The incidence of breast cancer among the progeny is not as high, however, as when the F_1 females were nursed by high tumor stock mothers. Comparable observations were obtained for the progeny of "A" stock females which nursed their "A" stock mothers for less than 24 hours before being fostered to low tumor stock females (*9*), that is, the progeny of the fostered "A" stock mice which developed breast cancer gave a lower incidence than did the control animals.

Six "B" stock females in the inoculated groups developed mammary carcinoma. One had been nursed by its low cancer stock mother and the others had been transferred to high cancer stock females. Among these five were two pairs of sisters and by chance three of the five, including one from each pair of sisters, were among the eight inoculated with mammary tissue.

The grafts were placed in the right axillary region by means of a trochar. In the inoculated mice 20 spontaneous tumors were observed in 18 animals. Of this number 5, or 25 percent, of the growths developed in the right axillary region. Three were found in animals injected with mammary tissue. None of the nine tumor mice which had received splenic tissue had growths appearing near the injection site and in several animals the grafts were recovered at autopsy.

SUMMARY

By the inoculation of normal tissue from young high cancer stock female mice, an influence may be transmitted which produces results similar to those of the "breast cancer producing influence" normally obtained in the milk while nursing.

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DEATHS DURING WEEK ENDED SEPTEMBER 16, 1939

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Sept. 16, 1939	Corresponding week, 1938
Data from 88 large cities of the United States:		
Total deaths	7,447	7,480
Average for 3 prior years	[1] 7,131	
Total deaths, first 37 weeks of year	308,697	301,889
Deaths under 1 year of age	458	529
Average for 3 prior years	[1] 509	
Deaths under 1 year of age, first 37 weeks of year	18,605	19,581
Data from industrial insurance companies:		
Policies in force	66,702,292	68,288,474
Number of death claims	11,008	11,124
Death claims per 1,000 policies in force, annual rate	8.6	8.5
Death claims per 1,000 policies, first 37 weeks of year, annual rate	10.2	10.2

[1] Data for 86 cities.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers.

In these and the following tables, a zero (0) indicates a positive report and has the same significance as any other figure, while leaders (----) represent no report, with the implication that cases or deaths may have occurred but were not reported to the State health officer.

Cases of certain diseases reported by telegraph by State health officers for the week ended September 23, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median

Division and State	Diphtheria				Influenza				Measles			
	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median
NEW ENG.												
Maine	0	0	3	1	----	----	----	----	157	26	6	8
New Hampshire	0	0	0	0	----	----	----	----	51	5	0	0
Vermont	0	0	2	0	----	----	----	----	0	0	1	3
Massachusetts	7	6	4	4	----	----	----	----	20	17	27	11
Rhode Island	0	0	0	0	----	----	----	----	99	13	0	0
Connecticut	3	1	1	2	----	----	7	3	9	3	7	7
MID. ATL.												
New York	3	8	11	14	[1] 2	[1] 3	[1] 5	[1] 6	14	35	57	52
New Jersey	1	1	7	10	4	3	4	5	11	9	8	14
Pennsylvania	7	14	11	25	----	----	----	----	12	24	17	30
E. NO. CEN.												
Ohio	7	9	11	28	2	2	----	4	4	5	6	12
Indiana	19	13	20	20	----	----	15	14	4	3	0	6
Illinois [4]	13	20	25	40	3	5	12	12	7	10	15	21
Michigan [2]	6	6	9	9	2	2	----	----	19	18	28	18
Wisconsin	0	0	2	4	62	35	28	16	35	20	59	41
W. NO. CEN.												
Minnesota	8	4	9	6	2	1	----	----	25	13	15	11
Iowa	10	5	2	3	2	1	----	----	6	3	5	3
Missouri	10	8	14	14	----	----	15	26	4	3	6	9
North Dakota	0	0	3	3	102	14	2	2	15	2	37	2
South Dakota	30	4	8	1	8	1	----	----	38	5	1	1
Nebraska	15	4	5	3	----	----	----	----	4	1	0	1
Kansas	8	3	6	6	----	----	1	1	8	3	4	4

See footnotes at end of table.

Cases of certain diseases reported by telegraph by State health officers for the week ended September 23, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Diphtheria				Influenza				Measles			
	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median
SO. ATL.												
Delaware	20	1	0	0					39	2	0	0
Maryland [2, 4]	6	2	7	8	6	2	7	6	15	5	10	6
Dist. of Col.	16	2	4	5			2		8	1	1	0
Virginia	66	35	50	35	69	37	85		19	10	6	6
West Virginia	27	10	16	27	5	2	13	20	5	2	5	5
North Carolina [3, 4]	150	103	123	67				1	10	7	26	17
South Carolina [3]	98	36	38	21	429	157	212	135	0	0	3	2
Georgia [3]	68	41	69	30	13	8	20		0	0	12	0
Florida [3]	27	9	10	10	9	3		1	3	1	22	1
E. SO. CEN.												
Kentucky	33	19	27	27			20	2	7	4	3	13
Tennessee [4]	41	23	45	45	30	17	38	17	7	4	10	10
Alabama [3]	88	50	51	51	35	20	30	11	2	1	34	3
Mississippi [2, 3]	38	15	17	22								
W. SO. CEN.												
Arkansas	37	15	25	11	7	3	13	8	5	2	1	1
Louisiana [3]	41	17	16	16	7	3	2	7	2	1	11	9
Oklahoma	16	8	15	10	10	5	25	17	2	1	3	1
Texas [3]	27	32	33	44	58	70	54	38	7	8	4	7
MOUNTAIN												
Montana	9	1	1	1			7	5	47	5	48	3
Idaho	0	0	0	2					20	2	4	1
Wyoming	0	0	2	0					196	9	2	2
Colorado	53	11	13	6	39	8			24	5	6	6
New Mexico	12	1	6	2				1	0	0	4	6
Arizona	12	1	6	2	405	33	28	9	0	0	4	3
Utah [3]	0	0	0	0			15		10	1	4	2
PACIFIC												
Washington	6	2	2	1					204	66	8	10
Oregon	20	4	2	1	30	6	3	11	99	20	7	5
California	7	9	28	30	8	10	11	15	44	54	167	44
Total	22	553	759	759	21	451	674	471	17	429	704	569
38 weeks	15	14, 292	17, 399	17, 399	191	153, 627	48, 389	105, 936	373	350, 598	763, 765	671, 536

Division and State	Meningitis, meningococcus				Poliomyelitis				Scarlet fever			
	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median
NEW ENG.												
Maine	0	0	0	0	0	0	0	1	12	2	2	5
New Hampshire	0	0	0	0	10	1	0	0	10	1	3	3
Vermont	0	0	0	0	40	3	0	0	0	0	6	5
Massachusetts	1.2	1	0	1	7	6	1	2	36	31	40	51
Rhode Island	0	0	0	0	0	0	0	0	0	0	1	5
Connecticut	0	0	0	0	12	4	0	0	33	11	12	12
MID. ATL.												
New York	0.8	2	4	4	51	128	5	19	23	57	74	99
New Jersey	0	0	0	1	45	38	3	4	39	33	23	23
Pennsylvania	2	4	3	3	25	50	8	8	54	106	121	121

See footnotes at end of table.

Cases of certain diseases reported by telegraph by State health officers for the week ended September 23, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Meningitis, meningococcus				Poliomyelitis				Scarlet fever			
	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median
E. NO. CEN.												
Ohio	0	0	0	1	9	12	1	16	61	80	89	111
Indiana	0	0	1	1	4	3	0	3	40	27	37	53
Illinois [4]	1.3	2	0	3	9	13	6	12	61	93	109	156
Michigan [2]	1.1	1	0	1	56	53	4	20	89	84	125	76
Wisconsin	5	3	0	1	11	6	6	6	105	60	63	68
W. NO. CEN.												
Minnesota	0	0	0	1	101	52	4	4	66	34	35	35
Iowa	0	0	0	0	10	5	2	3	57	28	18	36
Missouri	0	0	1	0	1.3	1	3	3	17	13	44	44
North Dakota	0	0	1	0	0	0	0	2	44	6	9	9
South Dakota	0	0	0	0	0	0	2	2	83	11	3	4
Nebraska	0	0	1	1	0	0	0	0	61	16	6	6
Kansas	8	3	2	0	8	3	0	3	95	34	47	47
SO. ATL.												
Delaware	0	0	0	0	0	0	0	0	118	6	1	1
Maryland [2,4]	3	1	1	1	6	2	1	5	83	27	10	19
Dist. of Col	0	0	0	0	16	2	2	2	40	5	7	8
Virginia	0	0	1	1	4	2	2	4	37	20	30	21
West Virginia	2.7	1	4	2	5	2	0	3	91	34	46	47
North Carolina [3,4]	0	0	0	1	4	3	1	1	92	63	58	58
South Carolina [3]	0	0	2	0	22	8	1	0	52	19	10	9
Georgia [3]	0	0	0	0	3	2	1	1	38	23	18	18
Florida [3]	0	0	1	0	6	2	0	0	9	3	6	5
E. SO. CEN.												
Kentucky	3	2	2	2	12	7	0	1	57	33	66	58
Tennessee [4]	4	2	2	2	0	0	1	1	76	43	33	36
Alabama [3]	0	0	2	2	1.8	1	4	2	46	26	18	18
Mississippi [2,3]	0	0	1	1	2.5	1	0	1	28	11	5	15
W. SO. CEN.												
Arkansas	0	0	0	0	2.5	1	1	1	22	9	11	6
Louisiana [3]	0	0	0	0	0	0	0	2	15	6	4	10
Oklahoma	0	0	0	0	4	2	0	0	8	4	19	9
Texas [3]	0	0	0	0	6	7	0	3	12	14	28	24
MOUNTAIN												
Montana	0	0	1	0	9	1	2	2	122	13	0	11
Idaho	0	0	2	0	0	0	1	1	31	3	8	8
Wyoming	0	0	0	0	22	1	0	2	1,113	51	1	1
Colorado	5	1	0	0	29	6	0	2	77	16	13	13
New Mexico	0	0	0	0	173	14	1	1	136	11	7	2
Arizona	0	0	0	0	25	2	0	2	12	1	9	5
Utah [3]	0	0	0	0	30	3	0	0	40	4	2	10
PACIFIC												
Washington	0	0	0	0	3	1	1	6	25	8	11	16
Oregon	0	0	0	0	15	3	0	2	30	6	33	20
California	0	0	0	1	27	33	2	27	66	80	66	88
Total	0.9	23	32	49	19	484	66	274	50	1,266	1,387	1,671
38 weeks	1.6	1,502	2,317	4,446	5	4,439	1,302	5,566	127	121,228	142,286	170,459

See footnotes at end of table.

Cases of certain diseases reported by telegraph by State health officers for the week ended September 23, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Smallpox				Typhoid and paratyphoid fever				Whooping cough		
	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934–38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases
NEW ENG.											
Maine	0	0	0	0	18	3	4	1	127	21	15
New Hampshire	0	0	0	0	10	1	0	0	30	3	0
Vermont	0	0	0	0	27	2	0	0	375	28	16
Massachusetts	0	0	0	0	1	1	1	4	107	91	65
Rhode Island	0	0	0	0	0	0	0	1	46	6	13
Connecticut	0	0	0	0	12	4	1	3	190	64	54
MID. ATL.											
New York	0	0	0	0	6	15	23	23	130	324	472
New Jersey	0	0	0	0	14	12	5	11	129	108	173
Pennsylvania	0	0	0	0	9	17	16	43	157	310	261
E. NO. CEN.											
Ohio	7	9	1	0	11	14	12	30	93	121	65
Indiana	1	1	6	0	12	8	3	16	67	45	8
Illinois [4]	1	1	0	0	46	70	19	26	140	214	338
Michigan [2]	0	0	1	1	12	11	14	14	160	151	291
Wisconsin	0	0	0	1	4	2	3	3	206	117	327
W. NO. CEN.											
Minnesota	0	0	1	1	8	4	4	4	140	72	39
Iowa	8	4	1	1	4	2	3	7	38	19	18
Missouri	0	0	1	0	17	13	14	21	32	25	26
North Dakota	7	1	0	1	0	0	3	3	58	8	17
South Dakota	8	1	4	0	0	0	0	1	68	9	3
Nebraska	0	0	1	1	0	0	3	1	15	4	8
Kansas	0	0	0	0	17	6	5	7	34	12	30
SO. ATL.											
Delaware	0	0	0	0	20	1	0	1	374	19	1
Maryland [2] [4]	0	0	0	0	9	3	13	18	136	44	27
Dist. of Col.	0	0	0	0	0	0	3	1	243	30	7
Virginia	0	0	0	0	22	12	24	24	49	26	41
West Virginia	0	0	0	0	32	12	21	21	19	7	39
North Carolina [3] [4]	1	1	0	0	10	7	15	18	69	47	147
South Carolina [3]	3	1	0	0	30	11	14	14	66	24	57
Georgia [3]	0	0	0	0	25	15	15	23	10	6	10
Florida [3]	0	0	0	0	3	1	6	4	15	5	30
E. SO. CEN.											
Kentucky	0	0	0	0	49	28	18	38	109	63	22
Tennessee [4]	0	0	1	0	28	16	21	31	42	24	26
Alabama [3]	0	0	0	0	11	6	15	15	25	14	47
Mississippi [2] [3]	0	0	0	0	10	4	1	6	------	------	------
W. SO. CEN.											
Arkansas	0	0	0	0	52	21	15	7	22	9	16
Louisiana [3]	0	0	0	0	41	17	12	15	39	16	26
Oklahoma	6	3	0	0	40	20	15	21	16	8	3
Texas [3]	0	0	1	0	36	43	45	48	44	53	74
MOUNTAIN											
Montana	19	2	9	5	28	3	2	2	37	4	20
Idaho	0	0	0	0	20	2	1	1	20	2	3
Wyoming	0	0	0	0	0	0	2	0	524	24	3
Colorado	24	5	2	1	34	7	15	5	96	20	54
New Mexico	0	0	0	0	49	4	14	15	222	18	9
Arizona	0	0	0	0	25	2	1	3	233	19	10
Utah [2]	0	0	0	0	10	1	1	1	248	25	18

See footnotes at end of table.

Cases of certain diseases reported by telegraph by State health officers for the week ended September 23, 1939, rates per 100,000 population (annual basis), and comparison with corresponding week of 1938 and 5-year median—Continued

Division and State	Smallpox				Typhoid and paratyphoid fever				Whooping cough		
	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934-38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases	1934-38, median	Sept. 23, 1939, rate	Sept. 23, 1939, cases	Sept. 24, 1938, cases
PACIFIC											
Washington	0	0	2	4	46	15	6	6	46	15	19
Oregon	0	0	8	0	35	7	3	4	0	0	15
California	2	2	3	1	7	8	13	18	93	113	175
Total	1	31	42	42	18	451	444	600	96	2,387	3,140
38 weeks	5	4,794	12,894	6,233	10	9,662	10,886	11,192	148	139,425	161,455

[1] New York City only.
[2] Period ended earlier than Saturday.
[3] Typhus fever, week ended September 23, 1939, 97 cases as follows: North Carolina, 1; South Carolina, 7; Georgia, 27; Florida, 7; Alabama, 17; Mississippi, 1; Louisiana, 5; Texas, 32.
[4] Rocky Mountain spotted fever, week ended September 23, 1939, 5 cases as follows: Illinois, 1; Maryland, 1; North Carolina, 1; Tennessee, 2.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Diphtheria	Influenza	Malaria	Measles	Meningitis, meningococcus	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid and paratyphoid fever
July 1939										
Arizona	4	59		13	0	4	9	13	5	9
Delaware				12	1		0	11	0	2
West Virginia	20	31		21	3	10	2	60	1	72
August 1939										
Alabama	70	61	1,047	29	5	29	4	76	0	69
District of Columbia	15	3		22	0		5	20	0	8
Florida	14	10	47	9	0	9	8	14	0	12
Georgia	121	30	363	26	3	148	12	44	1	107
Kansas	24	1	3	20	1	1	6	112	6	21
Louisiana	28	32	106	18	0	8	2	27	0	104
Maryland	7	1	1	15	3	2	3	47	0	40
Minnesota	21	6	5	92	0		156	83	2	16
Mississippi	90	1,184	8,197	183	2	424	2	22	0	45
Montana	3	24		45	1		0	30	0	11
Nebraska	10			4	1		8	26	3	3
New Jersey	9	6	1	52	3		52	61	0	28
Ohio	33	15	6	73	3		31	230	6	68
Oklahoma	23	238	275	15	3	13	5	24	5	88
Washington	5	1	1	206	0		4	34	0	13

Summary of monthly reports from States—Continued

July 1939

	Cases
Chickenpox:	
Arizona	6
Delaware	2
West Virginia	11
Dysentery:	
Arizona	63
West Virginia (bacillary)	24
German measles:	
Arizona	5
Mumps:	
Arizona	38
Delaware	8
West Virginia	27
Rabies in animals:	
Delaware	1
Rocky Mountain spotted fever:	
West Virginia	2
Septic sore throat:	
West Virginia	7
Trachoma:	
Arizona	22
Undulant fever:	
Arizona	7
West Virginia	2
Whooping cough:	
Arizona	41
Delaware	25
West Virginia	91

August 1939

	Cases
Chickenpox:	
Alabama	5
District of Columbia	5
Florida	7
Georgia	5
Kansas	18
Louisiana	1
Maryland	20
Minnesota	25
Mississippi	120
Montana	19
Nebraska	6
New Jersey	94
Ohio	107
Oklahoma	5
Washington	59
Conjunctivitis, infectious:	
Georgia	8
Dengue:	
Florida	4
Diarrhea:	
Kansas (infectious)	1
Maryland	63
Ohio (under 2 years; enteritis included)	256
Dysentery:	
Florida (amoebic)	7
Georgia (amoebic)	5
Georgia (bacillary)	16
Georgia (unspecified)	2
Kansas	1
Louisiana (amoebic)	9
Louisiana (bacillary)	3
Maryland (amoebic)	6
Maryland (bacillary)	36
Maryland (unspecified)	26
Minnesota (amoebic)	2
Minnesota (bacillary)	3
Mississippi (amoebic)	211
Mississippi (bacillary)	728
Montana (bacillary)	2
New Jersey (amoebic)	3
Ohio (amoebic)	2
Ohio (bacillary)	64
Oklahoma (amoebic)	1
Oklahoma (bacillary)	30
Washington (amoebic)	1
Encephalitis, epidemic or lethargic:	
Alabama	2
Florida	1
Kansas	1

August 1939—Continued

	Cases
Encephalitis, epidemic or lethargic—Continued.	
Louisiana	1
Minnesota	1
Nebraska	1
Ohio	3
Washington	33
German measles:	
Alabama	2
Kansas	3
Maryland	3
New Jersey	24
Ohio	5
Washington	7
Hookworm disease:	
Florida	372
Georgia	1,228
Louisiana	42
Mississippi	966
Oklahoma	1
Impetigo contagiosa:	
Kansas	5
Maryland	12
Montana	3
Ohio	80
Oklahoma	8
Washington	3
Lead poisoning:	
Ohio	5
Leprosy:	
Georgia	1
Louisiana	1
Mumps:	
Alabama	24
Florida	12
Georgia	22
Kansas	113
Louisiana	8
Maryland	18
Mississippi	124
Montana	29
Nebraska	9
New Jersey	143
Ohio	205
Oklahoma	5
Washington	39
Ophthalmia neonatorum:	
Alabama	1
Maryland	3
Minnesota	1
Mississippi	7
Montana	1
New Jersey	12
Puerperal septicemia:	
Georgia	2
Mississippi	30
Ohio	2
Rabies in animals:	
Alabama	15
Florida	1
Louisiana	6
Minnesota	3
Mississippi	4
New Jersey	45
Oklahoma	20
Washington	11
Rabies in man:	
Washington	1
Rocky Mountain spotted fever:	
District of Columbia	3
Maryland	28
Montana	1
New Jersey	9
Ohio	4
Scabies:	
Kansas	3
Montana	10
Oklahoma	1
Septic sore throat:	
Florida	9
Georgia	96
Kansas	5
Louisiana	1
Maryland	14

August 1939—Continued

	Cases
Septic sore throat—Con.	
Minnesota	15
Montana	8
Nebraska	1
New Jersey	10
Ohio	11
Oklahoma	19
Washington	2
Tetanus:	
Alabama	5
Florida	1
Georgia	2
Kansas	4
Louisiana	4
Maryland	2
Montana	2
New Jersey	1
Ohio	2
Oklahoma	2
Trachoma:	
Georgia	1
Kansas	1
Louisiana	5
Maryland	2
Minnesota	1
Mississippi	8
Montana	24
Ohio	4
Washington	1
Trichinosis:	
New Jersey	2
Tularaemia:	
Alabama	1
Georgia	9
Kansas	3
Louisiana	2
Maryland	1
Minnesota	1
Montana	2
Oklahoma	1
Washington	1
Typhus fever:	
Alabama	87
District of Columbia	1
Florida	26
Georgia	195
Louisiana	16
Maryland	1
Mississippi	12
Undulant fever:	
Alabama	9
Florida	7
Georgia	14
Kansas	22
Louisiana	6
Maryland	15
Minnesota	11
Mississippi	3
Montana	1
New Jersey	7
Ohio	7
Oklahoma	118
Washington	1
Vincent's infection:	
Florida	4
Kansas	15
Maryland	6
Washington	1
Whooping cough:	
Alabama	130
District of Columbia	162
Florida	41
Georgia	78
Kansas	88
Louisiana	89
Maryland	238
Minnesota	173
Mississippi	483
Montana	42
Nebraska	39
New Jersey	677
Ohio	870
Oklahoma	8
Washington	88

CASES OF VENEREAL DISEASES REPORTED FOR JULY 1939

These reports are published monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The figures are taken from reports received from State and city health officers. They are preliminary and are therefore subject to correction. It is hoped that the publication of these reports will stimulate more complete reporting of these diseases.

Reports from States

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Alabama	1,389	4.80	310	1.07
Arizona [1]				
Arkansas	752	3.67	231	1.13
California	1,533	2.49	1,168	1.90
Colorado	142	1.33	71	.66
Connecticut	221	1.27	101	.58
Delaware	234	8.97	56	2.15
District of Columbia	480	7.66	291	4.64
Florida	2,374	14.22	214	1.28
Georgia	1,750	5.67	35	.11
Idaho	21	.43	26	.53
Illinois	2,469	3.13	1,540	1.95
Indiana	390	1.12	108	.31
Iowa	255	1.00	163	.64
Kansas	249	1.34	113	.61
Kentucky	504	1.73	326	1.12
Louisiana	523	2.45	73	.34
Maine	35	.41	41	.48
Maryland	1,003	5.97	310	1.85
Massachusetts	409	.92	389	.88
Michigan	1,131	2.34	578	1.20
Minnesota	289	1.09	215	.81
Mississippi	3,344	16.53	2,723	13.46
Missouri	791	1.98	192	.48
Montana	44	.82	38	.71
Nebraska	51	.37	72	.53
Nevada [1]				
New Hampshire	16	.31	5	.10
New Jersey	1,094	2.52	322	.74
New Mexico	130	3.08	39	.92
New York	4,550	3.51	2,030	1.57
North Carolina	2,412	6.91	441	1.26
North Dakota	16	.23	25	.35
Ohio	782	1.16	293	.44
Oklahoma	796	3.12	304	1.19
Oregon	173	1.68	133	1.30
Pennsylvania	1,199	1.18	132	.13
Rhode Island	78	1.15	55	.81
South Carolina	1,646	8.78	288	1.54
South Dakota	19	.27	29	.42
Tennessee	1,178	4.07	485	1.68
Texas	3,928	6.36	924	1.50
Utah	16	.31	22	.42
Vermont	9	.23	29	.76
Virginia	1,675	6.19	287	1.06
Washington	228	1.38	256	1.54
West Virginia [1]				
Wisconsin	45	.15	128	.44
Wyoming	13	.55	11	.47
Alaska	8	1.28	21	3.35
Hawaii	55	1.35	52	1.28
Total	40,449	3.12	15,695	1.21

Reports from cities of 200,000 population or over [2]

Akron, Ohio	38	1.38	30	1.09
Atlanta, Ga	322	10.72	88	2.93
Baltimore, Md	685	8.20	210	2.51
Birmingham, Ala	345	11.72	62	2.11
Boston, Mass	161	2.02	144	1.81
Buffalo, N. Y	169	2.81	48	.80
Chicago, Ill	1,613	4.40	1,090	2.97
Cincinnati, Ohio	153	3.24	60	1.27
Cleveland, Ohio	209	2.21	92	.97

See footnotes at end of table.

Cases of venereal diseases reported for July 1939—Continued

Reports from cities of 200,000 population or over—Continued

	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Columbus, Ohio	98	3.13	27	0.86
Dallas, Tex	232	7.63	110	3.62
Dayton, Ohio	96	4.33	34	1.53
Denver, Colo	65	2.16	48	1.59
Detroit, Mich	552	3.04	245	1.35
Houston, Tex	321	8.96	78	4.97
Indianapolis, Ind	25	.65	33	.86
Jersey City, N. J	27	.83	2	.06
Los Angeles, Calif	472	3.10	306	2.01
Louisville, Ky	139	4.10	80	2.36
Memphis, Tenn	342	11.71	141	4.83
Minneapolis, Minn	88	1.76	70	1.40
Newark, N. J	256	5.64	88	1.94
New Orleans, La	23	.47	64	1.31
New York, N. Y	3,455	4.61	1,609	2.15
Oakland, Calif	38	1.21	27	.86
Omaha, Nebr	28	1.25	35	1.57
Pittsburgh, Pa	328	4.65	18	.26
Portland, Oreg	78	2.43	67	2.09
Rochester, N. Y	21	.61	33	.96
St. Paul, Minn	31	1.08	29	1.01
San Francisco, Calif	130	1.89	184	2.67
Seattle, Wash	78	2.01	71	1.83
Syracuse, N. Y	85	3.77	9	.40
Washington, D. C	480	7.66	291	4.64

[1] No report for current month.
[2] No report received from Kansas City, Mo., Milwaukee, Philadelphia, Providence, St. Louis, San Antonio, or Toledo.

WEEKLY REPORTS FROM CITIES

City reports for week ended Sept. 16, 1939

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Data for 90 cities:											
5-year average	119	53	14	134	309	360	2	332	82	1,086	--------
Current week [1]	83	40	8	87	256	224	0	324	58	1,002	--------
Maine:											
Portland	0	------	0	2	1	0	0	0	2	1	14
New Hampshire:											
Concord	0	------	0	1	0	0	0	1	0	0	12
Manchester	0	------	0	0	0	0	0	0	0	0	14
Nashua	0	------	0	0	0	0	0	0	0	0	9
Vermont:											
Barre	------	------	------	------	------	------	------	------	------	------	------
Burlington	0	------	0	0	0	0	0	0	0	0	9
Rutland	0	------	0	0	0	0	0	0	0	0	6
Massachusetts:											
Boston	0	------	0	7	4	9	0	11	0	31	176
Fall River	0	------	0	0	1	0	0	0	0	6	19
Springfield	0	------	0	0	0	0	0	1	0	1	34
Worcester	0	------	0	0	8	2	0	2	0	10	46
Rhode Island:											
Pawtucket	0	------	0	0	0	0	0	0	0	0	16
Providence	0	------	0	8	2	2	0	1	0	28	43

[1] Figures for Barre, Vt., estimated; report not received.

City reports for week ended Sept. 16, 1939—Continued

State and city	Diphtheria cases	Influenza Cases	Influenza Deaths	Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
Connecticut:											
Bridgeport	0	------	0	0	0	2	0	0	0	0	35
Hartford	0	------	0	0	1	1	0	0	0	22	33
New Haven	0	------	0	1	0	0	0	0	0	2	44
New York:											
Buffalo	0	------	0	1	3	2	0	3	3	1	118
New York	9	4	1	16	44	19	0	73	11	126	1,225
Rochester	0	------	0	0	0	0	0	0	0	3	56
Syracuse	0	------	0	0	2	3	0	0	0	54	49
New Jersey:											
Camden	0	------	0	0	0	1	0	1	0	0	26
Newark	0	1	1	1	2	0	0	8	4	18	79
Trenton	0	1	0	0	1	0	0	6	0	4	43
Pennsylvania:											
Philadelphia	0	2	3	3	14	5	0	17	4	79	406
Pittsburgh	3	------	1	1	8	6	0	6	1	15	130
Reading	0	------	0	0	1	0	0	0	0	1	23
Scranton	0	------	------	0	------	0	0	------	0	0	------
Ohio:											
Cincinnati	7	1	0	0	1	9	0	4	1	8	120
Cleveland	1	4	0	0	5	6	0	11	3	53	186
Columbus	3	------	0	3	2	1	0	2	1	4	77
Toledo	0	------	0	1	3	5	0	4	1	26	67
Indiana:											
Anderson	0	------	0	0	0	0	0	0	0	11	6
Fort Wayne	0	------	0	0	2	0	0	0	0	0	25
Indianapolis	3	------	0	0	2	5	0	2	0	24	84
Muncie	0	------	0	0	1	1	0	0	0	0	7
South Bend	0	------	0	0	1	0	0	0	0	4	11
Terre Haute	4	------	0	0	0	4	0	0	0	0	15
Illinois:											
Alton	0	------	0	0	0	0	0	1	0	0	10
Chicago	4	5	0	7	18	24	0	33	3	92	643
Elgin	0	------	0	0	0	1	0	0	0	6	6
Moline	1	------	0	0	0	0	0	0	0	0	13
Springfield	1	------	0	0	3	0	0	0	0	4	19
Michigan:											
Detroit	1	2	0	1	3	24	0	16	2	59	216
Flint	0	------	0	0	3	1	0	0	0	16	19
Grand Rapids	0	------	0	0	1	1	0	0	0	4	31
Wisconsin:											
Kenosha	0	------	0	0	0	0	0	0	0	4	5
Madison	0	------	0	3	0	0	0	0	0	6	30
Milwaukee	0	------	0	0	1	10	0	4	0	14	94
Racine	0	------	0	0	0	1	0	0	0	2	11
Superior	0	------	0	0	0	0	0	0	0	0	6
Minnesota:											
Duluth	0	------	0	1	0	0	0	0	0	0	18
Minneapolis	0	------	0	1	1	6	0	1	0	15	84
St. Paul	0	------	0	0	3	2	0	1	0	49	48
Iowa:											
Cedar Rapids	0	------	------	1	------	0	0	------	0	0	------
Davenport	0	------	------	0	------	2	0	------	0	0	------
Des Moines	0	------	0	0	0	2	1	0	0	0	43
Sioux City	1	------	------	0	------	0	0	------	0	2	------
Waterloo	2	------	------	2	------	3	0	------	0	0	------
Missouri:											
Kansas City	0	------	0	2	1	1	0	1	1	0	82
St. Joseph	0	------	0	0	2	0	0	0	0	0	26
St. Louis	2	------	0	1	5	2	0	5	4	20	185
North Dakota:											
Fargo	0	------	0	0	0	1	0	0	0	4	8
Grand Forks	0	------	------	0	------	0	0	------	0	0	------
Minot	0	------	0	0	0	0	0	0	0	0	2
South Dakota:											
Aberdeen	0	------	------	0	------	0	1	------	0	0	------
Sioux Falls	0	------	0	0	0	2	0	0	0	0	10
Nebraska:											
Lincoln	0	------	------	0	------	0	0	0	0	1	------
Omaha	0	------	0	0	3	1	0	2	0	4	68
Kansas:											
Lawrence	0	------	0	0	0	0	0	0	0	0	1
Topeka	0	------	0	1	0	3	0	0	0	0	17
Wichita	0	------	0	2	2	0	0	1	0	12	21

City reports for week ended Sept. 16, 1939—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Delaware:											
Wilmington	0	------	0	1	2	1	0	0	0	4	25
Maryland:											
Baltimore	0	------	0	2	9	6	0	10	2	87	192
Cumberland	0	1	0	1	0	1	0	0	0	0	8
Frederick	0	------	0	0	1	0	0	0	0	0	8
District of Columbia:											
Washington	2	------	0	0	7	2	0	10	5	26	140
Virginia:											
Lynchburg	6	------	0	0	0	0	0	0	0	7	14
Norfolk	2	------	0	0	0	0	0	0	0	0	21
Richmond	1	------	0	0	5	2	0	1	1	4	49
Roanoke	1	------	0	0	0	0	0	1	0	6	17
West Virginia:											
Charleston	0	------	0	1	1	1	0	0	0	0	16
Huntington	2	------	------	0	------	0	0	------	0	0	------
Wheeling	0	------	0	0	3	0	0	1	0	0	22
North Carolina:											
Gastonia	4	------	------	0	------	0	0	------	0	0	------
Raleigh	0	------	0	0	1	0	0	1	0	0	24
Wilmington	0	------	0	0	0	1	0	0	0	0	13
Winston-Salem	1	------	0	0	0	1	0	6	0	0	24
South Carolina:											
Charleston	0	6	0	0	4	0	0	0	0	0	18
Florence	0	------	0	0	1	0	0	0	0	0	11
Greenville	0	------	0	0	0	0	0	0	0	0	5
Georgia:											
Atlanta	1	------	0	0	2	5	0	7	0	0	76
Brunswick	0	------	0	1	0	0	0	0	0	0	3
Savannah	7	7	0	0	0	0	0	2	0	2	23
Florida:											
Miami	1	------	0	0	3	1	0	4	0	0	38
Tampa	1	1	1	0	5	0	0	1	0	0	18
Kentucky:											
Ashland	0	------	0	0	1	0	0	0	0	0	7
Covington	0	------	0	0	2	3	0	0	0	0	18
Lexington	0	------	0	0	0	0	0	0	2	2	16
Louisville	0	------	0	1	0	6	0	4	1	21	83
Tennessee:											
Knoxville	3	1	0	0	1	3	0	1	0	0	20
Memphis	0	------	0	0	1	1	0	3	1	17	73
Nashville	0	------	0	0	3	3	0	1	0	6	50
Alabama:											
Birmingham	1	------	0	0	4	2	0	1	0	2	60
Mobile	2	------	0	0	0	1	0	2	0	0	31
Montgomery	0	------	------	0	------	0	0	------	0	0	------
Arkansas:											
Fort Smith	1	------	------	0	------	0	0	------	0	0	------
Little Rock	0	------	0	0	4	0	0	0	0	0	4
Louisiana:											
Lake Charles	0	------	------	0	------	0	0	------	0	0	------
New Orleans	6	------	0	0	9	3	0	18	5	36	162
Shreveport	4	------	0	0	4	0	0	4	1	0	57
Oklahoma:											
Oklahoma City	0	------	0	0	0	0	0	1	3	0	42
Tulsa	0	------	------	0	------	0	0	------	1	0	------
Texas:											
Dallas	6	------	0	0	2	2	0	0	0	6	57
Fort Worth	0	------	0	0	2	1	0	0	0	5	25
Galveston	0	------	0	0	2	0	0	2	0	0	26
Houston	1	------	0	0	2	1	0	4	0	1	59
San Antonio	0	2	0	0	5	0	0	3	0	1	57
Montana:											
Billings	0	------	0	0	0	0	0	0	0	0	8
Great Falls	0	------	0	0	2	1	0	0	0	0	10
Helena	0	------	0	0	0	0	0	0	0	0	6
Missoula	0	------	0	0	0	0	0	0	0	0	4
Idaho:											
Boise	0	------	0	0	0	0	0	0	1	0	8
Colorado:											
Denver	1	------	0	0	6	9	0	3	1	1	74
Pueblo	0	------	0	0	1	0	0	0	0	7	5

City reports for week ended Sept. 16, 1939—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
New Mexico:											
Albuquerque	0		0	0	0	0	0	0	0	0	14
Utah:											
Salt Lake City	0		0	2	1	0	0	1	0	15	38
Washington:											
Seattle	0		0	3	5	1	0	2	0	4	81
Spokane	0		0	1	0	0	0	1	0	1	28
Tacoma	1		0	10	0	1	0	0	0	2	26
Oregon:											
Portland	0	1	0	1	0	0	0	1	0	5	74
Salem	0			0		0	0		0	0	
California:											
Los Angeles	3	3	1	2	3	21	0	14	1	16	326
Sacramento	0		0	1	1	0	0	1	0	0	29
San Francisco	0		0	2	10	4	0	14	0	7	180

State and city	Meningitis, meningococcus		Poliomyelitis cases
	Cases	Deaths	
New Hampshire:			
Nashua	0	0	1
Massachusetts:			
Boston	0	0	4
Rhode Island:			
Providence	0	0	1
New York:			
Buffalo	0	0	51
New York	4	1	20
Rochester	0	0	2
Syracuse	0	0	1
New Jersey:			
Camden	0	0	6
Trenton	0	0	1
Pennsylvania:			
Philadelphia	0	0	31
Scranton	0	0	1
Ohio:			
Cleveland	0	0	1
Indiana:			
Terre Haute	0	0	1
Illinois:			
Chicago	1	0	14
Michigan:			
Detroit	0	0	27
Wisconsin:			
Milwaukee	0	0	2
Minnesota:			
Duluth	0	0	1
Minneapolis	0	0	17
St. Paul	0	0	3
Missouri:			
Kansas City	0	0	2
St. Louis	0	0	1

State and city	Meningitis, meningococcus		Poliomyelitis cases
	Cases	Deaths	
South Dakota:			
Aberdeen	0	0	1
Kansas:			
Topeka	0	1	0
Maryland:			
Baltimore	0	0	1
District of Columbia:			
Washington	0	0	1
West Virginia:			
Charleston	1	1	0
Huntington	0	0	1
Wheeling	0	0	1
South Carolina:			
Charleston	0	0	2
Kentucky:			
Covington	0	0	1
Alabama:			
Birmingham	1	0	0
Louisiana:			
Shreveport	0	1	0
Texas:			
Dallas	0	0	1
Houston	0	0	1
Colorado:			
Denver	0	0	1
Pueblo	0	0	2
New Mexico:			
Albuquerque	0	0	2
Oregon:			
Portland	0	0	1
California:			
Los Angeles	0	0	16
Sacramento	0	0	1
San Francisco	0	0	3

Encephalitis, epidemic or lethargic.—Cases: New York, 4; Kansas City, 1; Grand Forks, 1; Baltimore, 1; Fort Worth, 1; Great Falls, 1; Pueblo, 1.

Pellagra.—Cases: Kansas City, 1; Charleston, S. C., 1.

Typhus fever.—Cases: Charleston, S. C., 7; Atlanta, 1; Savannah, 2; Miami, 3; Tampa, 1; Lake Charles, 4; New Orleans, 2; Dallas, 3; Fort Worth, 1; Galveston, 3; Houston, 6.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Weeks ended September 2 and 9, 1939.—During the weeks ended September 2 and 9, 1939, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Week ended Sept. 2, 1939

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis				1	1					2
Chickenpox				10	20	3	10	1	11	55
Diphtheria		1	1	14	2	2	5			25
Dysentery				5						5
Measles		4	1	48	16	15	4	1	8	97
Mumps				2	12	3			4	21
Pneumonia					5				1	6
Poliomyelitis		1		7	9	2	1			20
Scarlet fever		3		30	17	6	8	11	2	77
Trachoma							1			1
Tuberculosis		4	[1] 47	79	35	43	4	2		[1] 214
Typhoid fever and paratyphoid fever			4	16	7	4	3	1	1	36
Whooping cough		29		80	62	11	6	5	19	212

[1] Includes 33 cases delayed reports.

NOTE.—No cases of the above diseases were reported in Prince Edward Island during the week ended Sept. 2, 1939.

Week ended Sept. 9, 1939

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis				1						1
Chickenpox		2	1	109	35	5	2	8	7	169
Diphtheria		1	3	23	2	3	25	1		58
Dysentery				10						10
Influenza		5			22				1	28
Measles				53	33	13	3		3	105
Mumps				42	18	5		1	2	68
Pneumonia		2			14				3	19
Poliomyelitis		3		1	13	1				18
Scarlet fever	2	9	6	36	50	12	2	9	5	131
Trachoma							1		1	2
Tuberculosis		8	23	54	19	2	38	1		145
Typhoid and paratyphoid fever			1	28	10	5		1	2	47
Whooping cough		13	5	76	86	11	10	12	6	219

Vital statistics—First quarter, 1939.—The Bureau of Statistics of the Dominion of Canada has published the following preliminary statistics for the first quarter of 1939. The rates are computed on an annual basis. There were 20.0 live births per 1,000 population during the first quarter of 1939 as compared with 20.3 during the first quarter of 1938. The death rate was 10.8 per 1,000 population for the first quarter of 1939 and 10.5 per 1,000 population for the corresponding quarter of 1938. The infant mortality rate for the first quarter of 1939 was 72 per 1,000 live births and the same rate prevailed for the first quarter of 1938. The maternal death rate was 4.4 per 1,000 live births for the first quarter of 1939 and 4.5 per 1,000 live births for the same quarter of 1938.

The accompanying tables give the numbers of births, deaths, and marriages, by Provinces, for the first quarter of 1939, and deaths by causes in Canada for the first quarter of 1939 and the corresponding quarter of 1938:

Number of births, deaths, and marriages, first quarter 1939

Province	Live births	Deaths (exclusive of still-births)	Deaths under 1 year of age	Maternal deaths	Marriages
Canada [1]	55,677	30,136	4,026	244	11,955
Prince Edward Island	519	334	52	5	86
Nova Scotia	2,770	1,9[illegible]5	246	14	695
New Brunswick	2,816	1,423	280	16	452
Quebec	19,523	9,285	1,776	89	2,783
Ontario	15,935	10,661	893	68	4,341
Manitoba	3,339	1,645	201	16	785
Saskatchewan	4,073	1,443	222	17	741
Alberta	3,753	1,514	224	9	1,037
British Columbia	2,949	1,906	132	10	1,035

[1] Exclusive of Yukon and the Northwest Territories.

Deaths, by cause, first quarter, 1939

Cause of death	Canada [1] (first quarter)		Province								
	1938	1939	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Automobile accidents	234	175		7	10	41	70	6	2	18	21
Cancer	2,908	3,044	22	165	120	802	1,141	226	168	145	255
Cerebral hemorrhage, cerebral embolism, and thrombosis	552	587	7	60	50	125	217	22	40	31	35
Diarrhea and enteritis	463	369	1	10	6	220	69	18	23	12	10
Diphtheria	123	104		7	12	60	6	3	14	2	
Diseases of the arteries	2,598	2,997	20	182	102	590	1,465	155	128	136	219
Diseases of the heart	4,812	5,045	39	287	190	1,175	2,216	269	232	267	370
Homicides	36	25		3		5	9		2	8	3
Influenza	1,074	2,012	28	199	127	798	592	85	65	90	28
Measles	102	61			3	37	15	1	3	2	
Nephritis	1,762	1,812	30	95	60	831	541	68	54	46	87
Pneumonia	2,612	2,620	45	213	161	782	871	143	113	155	137
Poliomyelitis	13	4				1	3				
Puerperal causes	252	244	5	14	16	89	68	16	17	9	10
Scarlet fever	78	68			4	22	26	2	7	6	1
Smallpox	1	1									1
Suicides	225	185	2	8		31	70	16	8	22	28
Tuberculosis	1,564	1,547	23	105	62	708	301	105	61	73	109
Typhoid and paratyphoid fever	60	38	1	1	1	21	4	3	1	4	2
Violent deaths	1,010	914	11	88	34	180	372	53	42	34	100
Other specified causes		7,982	88	461	405	2,636	2,562	447	459	446	478
Unspecified or ill-defined		163	11	13	42	64	12	6	2	6	7
Whooping cough	160	139	1	7	18	67	31	1	2	7	5

[1] Exclusive of Yukon and the Northwest Territories.

IRISH FREE STATE

Vital statistics—Quarter ended June 30, 1939.—The following vital statistics for the Irish Free State for the quarter ended June 30, 1939, are taken from the Quarterly Return of Marriages, Births, and Deaths, issued by the Registrar General and are provisional:

	Number	Rate per 1,000 population		Number	Rate per 1,000 population
Marriages	3,593	4.9	Deaths from—Continued.		
Births	14,468	19.7	Influenza	205	0.3
Total deaths	10,383	14.2	Measles	46	
Deaths under 1 year of age	920	[1] 64	Puerperal sepsis	3	[1] 0.2
Deaths from:			Scarlet fever	11	
Cancer	892	1.2	Tuberculosis (all forms)	931	1.3
Diarrhea and enteritis (under 2 years)	109		Typhoid fever	16	
Diphtheria	40		Whooping cough	42	

[1] Per 1,000 live births.

ITALY

Communicable diseases—4 weeks ended June 18, 1939.—During the 4 weeks ended June 18, 1939, cases of certain communicable diseases were reported in Italy as follows:

Disease	May 22-28	May 29-June 4	June 5-11	June 12-18
Anthrax	15	20	10	9
Cerebrospinal meningitis	33	32	25	22
Chickenpox	578	538	529	506
Diphtheria	404	435	385	400
Dysentery (amoebic)	5	13	24	23
Dysentery (bacillary)	2	6	4	3
Hookworm disease	47	36	52	45
Lethargic encephalitis	1	2	1	1
Measles	1,964	1,925	1,607	1,677
Mumps	281	377	251	270
Paratyphoid fever	51	59	62	51
Pellagra	153	40	58	25
Poliomyelitis	70	75	93	139
Puerperal fever	22	13	23	28
Scarlet fever	269	279	261	221
Typhoid fever	281	269	223	228
Undulant fever	187	158	159	179
Whooping cough	480	625	497	578

LATVIA

Notifiable diseases—April–June 1939.—During the months of April, May, and June 1939, cases of certain notifiable diseases were reported in Latvia as follows:

Disease	April	May	June	Disease	April	May	June
Botulism		1	3	Poliomyelitis	4	6	7
Cerebrospinal meningitis	9	17	4	Puerperal septicemia	9	4	2
Diphtheria	100	93	83	Scarlet fever	238	294	216
Erysipelas	32	49	38	Tetanus	1	1	4
Influenza	524	133	81	Trachoma	42	28	65
Lead poisoning	2	1	2	Tuberculosis	227	210	337
Leprosy	1	1	3	Typhoid fever	50	50	52
Measles	2,654	3,530	2,042	Typhus fever	1		
Mumps	647	869	281	Whooping cough	92	64	83
Paratyphoid fever	4	7	29				

SWITZERLAND

Communicable diseases—June 1939.—During the month of June 1939, cases of certain communicable diseases were reported in Switzerland as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	2	Poliomyelitis	3
Chickenpox	196	Scarlet fever	342
Diphtheria	47	Trachoma	1
German measles	29	Tuberculosis	253
Influenza	22	Typhoid fever	2
Measles	56	Undulant fever	12
Mumps	120	Whooping cough	150
Paratyphoid fever	5		

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—A cumulative table giving current information regarding the world prevalence of quarantinable diseases for a six-month period appeared in the PUBLIC HEALTH REPORTS of September 29, 1939, pages 1792-1806. A similar cumulative table will appear in future issues of the PUBLIC HEALTH REPORTS for the last Friday of each month.

Cholera

China—Shanghai.—During the week ended September 16, 1939, 93 cases of cholera were reported in Shanghai, China.

Typhus Fever

Mexico—Jalisco State—Guadalajara.—During the week ended September 9, 1939, one death from typhus fever was reported in Guadalajara, Jalisco State, Mexico.

Yellow Fever

Colombia—Antioquia Department—San Carlos.—On September 2, 1939, one death from yellow fever was reported in San Carlos, Antioquia Department, Colombia.

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